THESIS

PROFILE MATHEMATICS PROBLEM-SOLVING BEHAVIOUR BASED ON STUDENTS' PAPE CLASSIFICATION WITH THEIR LEARNING STYLE ON GRADE VIII SMPN 30 MAKASSAR

Submitted to the Study Program of Mathematics, Faculty of Mathematics and Science, State University of Makassar in Partial Fulfillment of the Requirements for the Degree of Education Bachelor

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LEGALITY PAGE

This thesis is submitted by Veby Rezki Hulsia, the student's ID 1311440002, entitled Profile Mathematics Problem-Solving Behavior based on Students' *Pape* Classification with Their Learning Style on Grade VIII SMPN 30 Makassar had been defended in front of the committee of examiners SK. No. 3974/UN36.1/PP/2017, dated November 28th, 2017 and declared to be accepted as part of the requirements tbo obtain a Bachelor degree of Education in Study Program of Mathematics Education, Department of Mathematics, Faculty of Mathematics and Science, State University of Makassar on Friday, Desember 15th, 2017.

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MOTTO AND DEDICATION

✓ *The greatest tragedy of life is not death, but life without purpose. Therefore, keep dreaming to reach the goals and hopes, so that life can be more active. (Anonymous)*

✓ *Be sure that there is something waiting for you after much patience, to astonish you to a degree that you forget the bitterness of the pain. (Ali bin Ali Thalib)*

I dedicate this simple work as a proof of my love for my ummi **Samsia Lapangile,** who have provided moral support and endless material and prayer for my success, for no words are as beautiful as the prayer and prayers that are the most solemn beside the prayers spoken by the mother.

To my family, friends, and everyone who knows me for his advice, support and assistance in completing this work.

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ABSTRACT

Veby Rezki Hulsia, 2017. *Profile of Mathematics Problem-Solving Behavior based on Students' Pape Classification with Their Learning Style on Grade VIII SMPN 30 Makassar.* Thesis. Faculty of Mathematics and Science. State University of Makassar.

This research aims to obtain information about the profile mathematics problem-solving behavior in solving the story problem of cube and cuboid based on learning style, to fulfill the aims its did descriptive research that is qualitative. The subject of this research consisted of four people. The four subjects of this research were chosen based on the learning style criteria of students on grade VIII SMP Negeri 30 Makassar. The first subject represents the *converger* learning style, the second subject represents the *diverger* learning style, the third subject represents the accommodator learning style, and the fourth subject represents the assimilator learning style. The Instruments in this research are the researchers themselves as the main instrument supported by additional instruments of learning style questionnaire, mathematics problem-solving test, and interview guidelines. The problem solving that is meant in this research is the task that has given to the students to be solved based on their understanding. The result of this research shows that the mathematics problem-solving behavior of *converger* subject tends to be two types of behavior that is DTA-limited context for surface area of cube and cuboid problem, while on the volume of cube and cuboid problem shown is MBA-full context. For *diverger* student mathematics problem-solving behavior tend to be DTA-limited context. For *accomodator* student mathematics problem-solving behavior tends to MBA-justification. For assimilator student mathematics problem-solving behavior tends to t Direct Translation Approach.

Key Words: profile, learning style, mathematics problem-solving behavior.

PREFACE

بِسْمِ اللهِ الرَّحْمٰنِ الرَّحِيْمِ

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This thesis is one of the requirements to take the bachelor of education examimation in Mathematics Department FMIPA UNM Makassar. Although the author has tried to maximize the refinement of this thesis, the author is aware of the existence of various deficiencies in the writing of this thesis, both in terms of grammar, systematics writing, and the contents contained in this thesis. Therefore, the authors are hoping for suggestions and criticisms that are constructive for the improvement and refinement of this thesis.

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The Author

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CHAPTER I

INTRODUCTION

A. Background

Mathematics is one of the compulsory subjects taught in school. One of the reasons why mathematics is taught at all levels of education is, since mathematics is the science that underlies the universal development of modern technology. In addition to mathematics also has a very important role for the development of the various disciplines that is able to train the ability of the human intellect. Rapid developments in technology nowadays cannot be separated from the role of mathematical development, and to create future technology indispensable mastery of mathematics are quite sufficient that should be nurtured early on.

Mathematics is not only a medium for scientific statements and formulas, but also to the statement of the results of thought and thought processes. Mathematics is a great tool and a lot of knowledge. With mathematics science into simple, clear, and easier to develop. Mathematics is often applied in resolving problems on other science, both natural sciences such as astronomy, physics, chemistry, as well as the social sciences such as economics and demographics.

According to Asikin (2012:23), studied mathematics at the school has several goals, namely: (1) organizing the logical reasoning of students and build his personality, and (2) to make students to solve mathematics problems and applying mathematics. Meanwhile, the National Council of Teachers of

Mathematics as quoted by Effendi (2012:2), setting out five standard mathematical ability should be possessed by students, namely the ability of problem solving, communication skills, the ability of the connection, the ability of reasoning, and the ability of representation. According to Posamentier and Stepelmen, as quoted by Dewanti (2011:36), NCSM (National Council of Science Museums) put problem-solving as a first order of 12 essential components of mathematics. Ollerton, as quoted by Ellison (2009:16), stated that the ability of problem solving is one of the important aspects in the independent learning and help move from didactic teaching. The more students learn independently, the more effective they become a student.

Problem solving becomes important in mathematical educational purposes because in the daily life of man indeed can never be separated from the problem. The activity of solving the problem can be considered a fundamental human activity. The problem to look for the way out by the man himself, if do not want to be defeated by life.

In the process of learning, problem-solving ability based on the concept of students is very important. To solve the problem of understanding the concept of capability is required as a prerequisite and the ability to do the relationships between concepts. Understanding students who are less about the relationships between the concepts of visible when students confront the question of the shape of the story. One form of matter of the intended story is all about the story of mathematics. Mathematics story problem is the kind of problem that requires

understanding and logical reasoning and requires understanding Interfaith concept to solve them.

In problem-solving learning, the most important thing is the process is not the result. In this process, students must have a way of thinking, habits, and curiosity in solving problems. Student behavior in solving problems is important to note in addition to the outcome of the problem. Student behavior is related to the way students in solving problems, how the habits and curiosity of students in solving the problem. The good ability of students in solving problems can be seen from the process or behavior of students solve math problems.

The research conducted by Pape (2004) observes and illustrates student behaviors when solving mathematical problems in the form of story problems from the perspective observed from the active reading process, including various behavioral strategies, such as re-reading, summarizing, questioning and transforming the structures sentences to improve reading comprehension.

In resolving a problem reserved behavior characteristic of the story, shown every student in writing the resolution of a matter of different stories with the other students. Characteristics of behavior found by Pape (2004) as Direct Translation Approach-Proficient (DTA-Proficient), Direct Translation Approach-Not Proficient (DTA-Not Proficient), Direct Translation Approach-Limited Context (DTA-Limited Context), Meaning-Based Approach-Full Context (MBA-Full Context) and Meaning-Based Approach-Justification (MBA-Justification).

One material that is close to everyday life is to wake up a flat side room. The application of the concept of material to build a flat side room is often used in

solving problems in everyday life. Through the process of completion of the students, teachers can analyze student problem-solving behavior. Then the teacher performs remediation in accordance with the analysis of problem-solving behavior on the student's work and in the future, the teacher can direct the student's behavior in order to be able to transform the sentence structure to improve reading comprehension, inquire, and conclude.

The fact that exist within and outside Indonesia indicated that the ability of the mathematical problem solving of students still low, both at the level of secondary education or higher education. It is based on the test results of PISA (Program for International Student just my Assessment) and TIMSS (Trends in International Mathematics and Science Study). Based on the survey results by 2015 TIMS shows Indonesia's students are at the rank 36 of 49 countries and from the results of the test and evaluation of PISA 2015 Indonesia students' performance is still classified as low, with a score of 386 mathematics skills of average standard value set by PISA is 500 and ranked 64. On the survey one of the indicators is the cognitive problem solving. TIMMS and PISA survey results show that the mathematical ability of students in Indonesia, particularly the ability of the mathematical problem solving of students is still low.

Based on the experience when the practice of field experience in SMP of 6 Majene, the ability of mathematical problem solving of students still belongs to low. Most of the students are having problems at the time of completing a mathematics problem. Meanwhile, the results of the interviews in January 2016 to

a mathematics teacher shows that over 50% of students have the less problem-solving ability.

In line with the importance of mathematical problem solving in mathematics education, then educators must cultivate in order to make sure students achieve optimal results in mastering problem solving skills. A variety of efforts organized by teachers, among which can provide a good learning media, or by providing the appropriate teaching methods for students.

But the students ' ability to understand and absorb the lessons or information was certainly different, some are fast, medium and slow there. How students to absorb the lesson this is called learning styles. Learning style is the typical way of learning for students. The difference in learning style it shows the fastest and best for every individual to be able to absorb information from outside himself. Through the varied learning styles of students in completing a then the issue had a different thought process. So that learners have a separate way in understanding, processing, and presenting issues into tangible form.

The existence of differences in learning styles of each student, it is very important for the teacher to analyze student learning style so get information – information that can help teachers to be more sensitive in understanding the differences in class and can carry out a meaningful learning.

Mentioned by Honey & Mumford (Ghufron, 2012:138) about the importance of individuals know their learning style is one of them to help individuals to plan their learning and goals, as well as analyzing a person's level

of success. Of the statement shows that learning style affects a person's thought process which would then affect success.

Based on the aforementioned background problem description, then the need for further research on mathematical problem-solving behavior and types of learning styles of students. In this case the mathematical problem-solving behavior in which Pape and Kolb learning style type. So the authors interested in taking the title: " Profile Mathematics Problem-Solving Behaviour Based on Students' Pape Classification with Their Learning Style on Grade VIII SMPN 30 Makassar".

B. Problem Statement

Based on background, the problem statement of the study is "How does Profile Mathematics Problem-Solving Behavior Based on Students' Pape Classification with Their Learning Style on Grade VIII SMPN 30 Makassar?"

C. Research Purpose

The research purpose is to figure out profile mathematics problem-solving behaviour based on students' Pape classification with their learning style on grade VIII Negeri 30 Makassar.

D. Benefits of research

The results of this research provide the following benefits :

1. Theoretical Benefits

Contribute to knowledge particularly education of mathematics that deals with the behavior of mathematical problem solving and learning style.

2. Practical Benefits

a. To Teachers

1) Can figure out a mathematics problem-solving behavior of students so teachers are expected to understand and direct their students in analyzing the problem, monitor the completion of the process, and evaluate the results.
2) Can identify the learning styles of students so as to provide teachers to be able to further enhance learning in the classroom.

b. To Students

1) Can get to know the description of the behavior problem solving skills.
2) Can recognize its own learning style so as to process, explore, and learn the information easily.
3) Students are more skilled and conscientious and motivated to further study after learning the behavior problem solving skills.

c. To Researchers

1) Can respond to existing problems.
2) Can provide knowledge for researchers as a teacher of mathematics.

E. Terms Limitation

To avoid diversity of interpretation of some terms that are used, then the perceived need to restrict any sense of the term. Terms need to be restricted to the sense as follows:

1. Mathematics Problem-Solving

Mathematics problem-solving is the planned process is done as an effort to obtain the completion of mathematics problems. This planned process contains the methods, procedures, and strategies in solving mathematics problems that are being encountered.

2. Learning Style

Learning styles are examined four types of learning styles expressed by David Kolb. The fourth type are diverger, assimilator, converger, and accomodator.

3. Mathematics Problem-Solving Behaviour

Mathematical problem solving behavior investigated is the development of classification by Hegrty and his friends. The five categories the problem solving behavior include:

a. *Direct Translation Approach-proficient (DTA-proficient);*
b. *Direct Translation-not proficient (DTA-not proficient);*
c. *Direct Translation Approach-limited context (DTA-limited context)*
d. *Meaning-Based Approach-full context (MBA-full context)*
e. Meaning-Based Approach-justification (MBA-justification).

CHAPTER II

LITERATURE REVIEW

A. Study And Learning

Learning is an important process for everyone to change their behavior and learning that includes everything that is thought out and done by someone. Learn to play an important role in the development, habits, attitudes, beliefs, goals, personality, and even the perception of a person. According to Seifert & Sutton (2009:20), learning is a relatively permanent change-related behavior, ability, knowledge, or behavior that results from the ability of personal psychology or experience social. Winkel (1991:36) takes part, points out that learning is a mental/psychological activity which takes place in the active interaction with the environment produces changes in the knowledge, understanding, skills and attitudes. These changes are relatively constant and trace. Same opinion , Slameto (2003:2) argues that learning is work done to a person to obtain a new behaviour change as a whole, as a result of the experience of a new behaviour change as a whole, as a result of his own experience in interaction with the environment.

Definition of learning above amply explained that always happens in learning the elements of change and experience is emphasized in the study. Elements of change and the experience was almost always stressed in the definition of learning advanced by some experts on education, among other things:

1. Howard L. Kingsleny

"Learning is the process by which behavior (in the broader sense) is originated or changed trough practice or training." (Baharuddin,2010:162)

2. Cronbach

"Learning is shown by a change in behavior as a result of experience." (Suryabrata, 2008:231)

3. Morgan

"Learning is any relatively permanent change in behavior that is a result of past experience." (Suryabrata, 2008:232)

As such learning is the process of a person's effort marked by changes in behaviour resulting from the process is active in acquiring new knowledge that is the result of experience and practice in its interaction with the environment that concerns the cognitive, affective, and psychomotor. These changes can be demonstrated in a variety of forms such as reasoning, attitude, skills, habits, and so on. So someone said to have learned if doing learning activities and in the activities that occur a changes.

Learning according to Dimyati and Mujiono (Sagala, 2003:62) are activities teachers are hard-wired in the design of instructional, to make students learn actively, which places emphasis on the provision of learning resources. Learning according to Corey (Sagala, 2003:61) is a process in which a person deliberately managed environment to allow he participated in certain behaviour in special conditions or generate the response to certain situations, learning is a special subset of education.

B. Mathematics

According to Johnson and Myklebust (Soedjadi, 2000:11) is a mathematical function of the symbolic language practice to express quantitative relationships and spatial while from theoretical function is to facilitate thinking. Mathematics is also defined as a branch of science that is organized logically that discuss numbers, calculation, logical reasoning, quantitative, space facts and strict rules.

Mathematics emphasizes activities in the world of the ratio (reasoning), rather than emphasizing the experiments or observations results. Mathematics is formed because the thoughts of man, that relate to ideas, processes, and reasoning Russefendi (Suwangsih, 2006:3).

Mathematics of the human experience empirically. Then experience was processed in the world ratio, processed in the analysis with the reasoning in the cognitive structure so formed to mathematics concepts, so that the mathematical concepts that formed it easily understood by others and can be manipulated appropriately, then used the language of mathematics or mathematical notation which is worth global (universal).

At first the branch of mathematics is Arithmetic, algebra, geometry after it discovered Calculus, statistics. Abstract algebra, Linear algebra, the set, the geometry of linear, Vector Analysis and so on.

Suwangsih (2006:4) suggests some definitions experts about mathematics, including the following:

1. Russefendi (1988:23)

   Mathematics organized from elements that are not defined, definitions, axioms, and postulates. What if the propositions have been confirmed then the propositions are valid in General, because that's what mathematics is often called a deductive science.

2. James and James (1976)

   Mathematics is the science of logic, about the shape, arrangement, quantity, and concepts that relate to one another. Mathematics is divided into three major parts, namely analysis, algebra and geometry.

3. Jhonson and Rising in Russefendi (1972)

   Mathematics is the thinking patterns, patterns of organizing, a logical proof.

4. Sujono (l988)

   Mathematics is defined as the branch of exact science and organized systematically. In fact, she defines it as the Science Mathematics help interpret the ideas and conclusions.

Based on the understanding of the mathematics above it can be concluded that mathematics is a science of logic, abstract objects, concepts that are related to each other that the necessary in deductive. Mathematics is also a science that has a pattern of regularity of related ideas, processes, and reasoning.

C. Mathematics Problem-Solving Behaviour

1. Mathematics Problems

Any problems encountered in everyday life cannot fully is said to be a problem. According to Newell and Simon, as quoted by Darminto (2010:24), the problem is a situation where an individual wants to do something but do not know how or actions necessary to obtain what he wants. Hudojo, as quoted by Yuwono (2010:35), stating that something called the matter to the student if: (1) the questions posed to the learners should be understandable by learners, but that question should be a challenge for him to answer, and (2) these questions cannot be answered with a routine procedure that has been known to learners.

According to Saad & Ghani (2008:119), the mathematical problem is defined as a situation that has a clear purpose but faced with obstruction due to lack of a known algorithm to break it in order to obtain a solution. Meanwhile, Polya (Yuwono, 2010) explains mathematical problem into two types, namely the problem of finding (problem to find) and the problem of proving (problem to prove). The problem of finding problems that aims to explore, define, or get the value of the specified object that is not known in the matter and give the appropriate conditions. While the problem of proving that is the problem with a procedure for determining a statement is true or not true.

2. Mathematics Problem-Solving

Problem solving is the application of concepts and skills. In problem solving usually involves some combination of concepts and skills in new

situations or in different situations. Problem solving is also happening in the learning of mathematics, which, on completion of mathematics needed that prioritizes the use of problem solving concepts and skills to correctly prove that systematic and logical so that requires high precision.

According to Robert l. Solso (Mawaddah and Anisah, 2015), problem solving is a thought which was routed directly to find a solution or way out for a specific problem. While Siwono (Mawaddah and Anisah, 201) contends that problem solving is a process or individual efforts to respond or resolve the barriers or constraints when a reply or answer method has not yet been evident. Thus troubleshooting is the process of thinking individuals are directed to determine what needs to be done in overcoming a problem.

According to Jihad (2008:153) in learning mathematics learners has specific objectives which are:

a. Use of complex algorithms (procedures)

b. perform a manipulation in mathematics

c. Organize data

d. also take advantage of symbols, tables, and diagrams

e. know and find patterns

f. draw conclusions

g. Make sentences or mathematical models

h. make interpretations of waking up in the fields and spaces

i. Understand measurements and unit

j. Using calculators and mathematics tools

In achieving these objectives, the teaching and learning of mathematics doesn't always work and running smoothly. This is apparent when the students solve problems of mathematics given by the teacher. Many learners who are still having difficulty and have an error at the moment working on. Constraints that appears is the impact of errors in the process of learning to the learners and in his understanding of the given material. In solving problems in mathematics, many learners still encounter obstacles, obstacles that occur in mathematical study revolves around the characteristics of abstract mathematics, media issues, the issue of the learners or teachers. These constraints gave birth to failure on learners, according to Jihad (2008:154) constraints in solving problems in mathematics occurs because the.

a. Learners not able to capture the concept correctly.
b. The learners did not catch the meaning of the symbols.
c. The learners do not understand the origin of a principle.
d. Students are not able to smoothly use operations and procedures.
e. Knowledge learners not complete

At the time, the students solve mathematics problems are faced with multiple challenges such as the difficulty in understanding the question. This is because the problem faced is not a problem that previous students ever faced.

There are several stages of problem solving that was introduced by mathematicians and teachers of mathematics as problem solving stage according to Polya, Krulik and Rudnick, and Dewey. Schoenfeld, as quoted by Ellison (2009:17) States that it is not a teaching about strategies that can cause a difference in solving the problem, more than that, practice solving problems who then makes a difference. According to Saad & Ghani (2008:120), the student needs to do several things such as accepting the challenge of problem solving strategies, plan, implement, and test strategy back solution is obtained.

Based on some understanding of the above, it can be concluded that the problem solving in mathematics is an activity to seek completion of mathematics problems encountered with the use of all the mathematical knowledge of stock owned.

3. Mathematics Problem-Solving Behaviour Based on Pape's Classification

On solving a problem, the most important besides result or problem solving is the process. In the process of problem solving students must have a way of thinking, habits and curiosity to solve these problems. Pape (2004) observed and described the behaviour of the students when completing a mathematics story problem ranging from re-reading, conclude, ask and transforming sentence structures to improve their understanding. So the behavior observed in this study is the student behavior while working on mathematics story problem in systematic.

According to Pape (2004) mathematical problem solving behavior categorized into two approaches, namely Direct Translation Approach/DTA and Meaning-Base Approach/MBA. Then the DTA (Direct Translation Approach) are grouped into three approaches, namely Direct Translation Approach-proficient (DTA-proficient), Direct Translation Approach-not proficient (DTA-not proficient) and Direct Translation Approach-limited context (DTA-limited context), while the MBA (Meaning-Base Approach) grouped into two approaches, namely Meaning-Base Approach full context (MBA-full context) and Meaning-Base Approach-justification (MBA-justification).

1. Direct Translation Approach/ DTA

   Approach with direct means Direct Translation Approach/DTA) students are characterized by the lack of evidence in transforming information issues (e.g., write down the things that are known from items), using context in resolving problems with connecting elements from a known problem. The process of troubleshooting is done directly without using the context of the problem. Then to make it more clear this grouping are grouped into three, namely.

   a. Direct Translation Approach-proficient (DTA-proficient)

   In the DTA-proficient automatically and efficiently transforming problems into mathematical calculations without reading the back problems are given. Students do not have difficulty in resolving the problem will be given but gives the sequence or the Systematics of the

information provided, the use of context during calculation, although the final answer can be expressed in the context of the problem.

Sample questions extracted from Pape (2004):

(1) Parhmark sell 120 bottles of drinking water per day.

(2) The Sales equal to twice the sales made Waldbaums each day.

(3) How many bottles of drinking water sold Waldbaus for five days?

Table 2.1. Problem-Solving Behavior Of DTA-Proficient

Student Activities	Detail Characteristics Of Behavior
- Read the whole sentence reserved - Perform calculations directly without reading the back problem or referring the matter - Students "first, 120 divided 2 equals 60. Then 60 multiplied by 5; 5 multiplied by 0; 5 multiplied by 6 " - Do not state the answer	1. Solve the issue directly 2. Do not represent context problems at the completion or calculation 3. Not reread 4. Do not read back before the calculation 5. No explanation on the calculation of the

Source, Pape (2004)

b. Direct Translation Approach-not proficient (DTA-not proficient)

In the DTA-not proficient students less skilled or difficulty reading the problem, understand the problem, choosing an approach or method of solving problems and doing calculations. Students with behavior of DTA-not proficient hesitant or can't do calculations towards the solution of the problem. The calculations being done less meaningful or simply serve to accomplish the task.

With the example of the same problem with the DTA-proficient, the following table is students and detail the characteristics of problem-solving behavior in the DTA-not proficient committed students.

Table 2.2. Problem-Solving Behavior of DTA-not proficient

Student Activities	Detail Characteristics Of Behavior
- Read the whole sentence reserved - States will read back - Reread the entire sentence reserved but not record information - Reread the entire sentence reserved - 120 count multiplied by 2 - Students: "okay. 120 multiplied 2 equals 240 " - Refers to a short problem and calculate 240 multiplied by 5 - Do not state the answer	1. Hesitation and difficulty performing the calculation 2. Read back without transforming the operations of mathematics 3. The context of the problem are not used in calculation or process 4. Re-read but not followed by calculation and not considering the use of context 5. Do not read back before the calculation 6. No explanation on the calculation

Source. Pape (2004)

c. Direct Translation Approach-limited context (DTA-limited context)

In the DTA-limited context students directly translate the known elements of the problem for the calculation but the use of the context of the problem and the limited results.

With the example of the same problem with the DTA-proficient, the following table is students and detail the characteristics of problem-solving behavior in the DTA-limited context is done by student.

Table 2.3. Problem-Solving Behavior of DTA-limited context

Student Activities	Detail Characteristics Of Behavior
- Read the whole sentence reserved - Directly into the calculation by mentioning "two times" - Stated answer early "bottles per day" - Calculate 60 x 5, refer to problems with the mention "today" - Respond to the context "in 5 days"	7. Hesitation and difficulty performing the calculation 8. Read back without transforming the operations of mathematics 9. The context of the problem are not used in calculation or process 10. Re-read but not followed by calculation and not considering the use of context 11. Do not read back before the calculation 12. No explanation on the calculation

Source, Pape (2004)

2. Meaning-Base Approach/ MBA

On the approach to the meaning (Meaning-Base Approach/MBA) is characterized by three main behavior that is the behavior of students who find the information issue, the use of context, explanation or justification of mathematical operations. Students write down the information given in the context of the problem and suggested answers that demonstrate an understanding of his problem or relevant to the problem given. Then an MBA are grouped into two, ie.

a. Meaning-Base Approach full context (MBA-full context)

On MBA-students read the full context, noted the problem and write down the order in accordance with the context of the problem that is used in the calculation. On the final answer is not accompanied by a justification on the step-rare settlement.

With the example of the same problem with the DTA-proficient, the following table is students and detail the characteristics of problem solving behaviour on MBA-full context which do the students.

Table 2.4. Problem-Solving Behavior of DTA-full context

Student Activities	Detail Characteristics Of Behavior
- Read the whole sentence reserved - Re-read the first sentence and record information (pathmak as pm) - Re-read the second sentence to "waldbaums". Count 120 x 2 but not sure of the answer. - Read the second sentence back and focus on "equal to twice" - Then calculating the division of 120/2 and the results were declared in the context of the problem - Students: "to find out the number of bottles of drinking water sold waldbaums per day, we have to divide 120 by 2, i.e. 60 per day" - Re-read the third sentence - Students "then we multiply the 60 with 5 to find out the number of bottles of drinking water sold waldbaums in 5 days" - Calculate 60 x 5 - Students: "60 x 5 = 300, waldbaums sell 300 bottles of drinking water in 5 days" - Stated the answer in the context	1. Provide a context that supports the calculation of 2. Rereading is followed by the calculation directly with the use of the context of the problem 3. The context of the problem may be stated on an answer 4. Rereading followed by calculation and calculation support 5. There are explanations of answers but no justification

Source, Pape (2004)

b. Meaning-Base Approach-justification (MBA-justification)

On MBA-justification students behave the same as the full context MBA, what separates at the time of calculation of the students give justifications at every step. According to KBBI, the justification was the

verdict (reasons, considerations). In this study refers to a justification of the reasons or the fact that the underlying problem resolution step done students.

With the example of the same problem with the DTA-proficient, the following table is students and detail the characteristics of problem solving behaviour on MBA-justification done students.

Table 2.5. Problem-Solving Behavior of DTA-justification

Student Activities	Detail Characteristics Of Behavior
- Read the whole sentence reserved - Re-read the first sentence and record information (pathmak as pm) - Re-read the second sentence to "waldbaums". Count 120 x 2 but not sure of the answer. - Read the second sentence back and focus on "equal to twice" - Then calculating the division of 120/2 and the results were declared in the context of the problem - Students: "to find out the number of bottles of drinking water sold waldbaums per day, we have to divide 120 by 2, i.e. 60 per day" - Re-read the third sentence - Students "then we multiply the 60 with 5 to find out the number of bottles of drinking water sold waldbaums in 5 days" - Calculate 60 x 5 - Students: "60 x 5 = 300, waldbaums sell 300 bottles of drinking water in 5 days" - Stated the answer in the context	1. Provide a context that supports the calculation of 2. Rereading is followed by the calculation directly with the use of the context of the problem 3. The context of the problem may be stated on an answer 4. Rereading followed by calculation and calculation support 5. There is an explanation and justification of the answers

Source, Pape (2004)

The justification done students could be seen in the calculation of the students. In the table, first calculate the 120 students tama divided 2 with justification. "the 120 2 times the number sold Walbaums". Then students continue by multiplying 60 by 5 with justification, "because sales are expressed in 5 days". In the process the students give the justification calculation at each step resolution.

D. Learning Style

The ability of each person to understand and absorb the lessons it is definitely different from each other. Some are fast, medium, and some are very slow. It is certainly influenced by their different ways to understand and capture the information. There are convenient when learning in silence, but on the contrary i.e. learning by listening to music. A sense of comfort in learning more we know the style of learning.

There are several opinions about the definition of learning styles (Aditya, 2015). Some of these opinions among others.

1. Nasution argues that learning style of students is how to reacts with using stimulants that he received in the learning process.

2. Gunawan explained the learning style is the way we like to do the activity of thinking, process, and understand a transformation.

3. Depporter & Hernacki formulate that learning style is a combination of how he absorbs and then organize and manipulate information.

4. Samples. argues that learning style is a habit that reflects the way we treat the experience that we gained through this modality.

5. Winkel , learning style is the typical way of learning for students. How typical are individuals often unconscious and when it was formed tend to last continuously.

Based on some of the opinions above, researchers concluded that learning style is the way the best comfort and became characteristic for acquiring the information learned. How to best comfort in question is the most convenient conditions and utilization of senses what is more sensitive.

According to Montgomery & Groat (1998:1-5), there are three models of learning styles that are commonly used in research related learning style. Three models of learning styles is as follows.

1. Myers-Briggs Learning Style

This learning style model developed by Isubel Briggs Myers and Katherine Briggs Cooks. Personality profile of a person identified through 4 dimensions, i.e. the orientation of the living (extroverted/introverted), perception (sensing/intuitive), decision-making (thinking/feeling), and attitude (judgment /perception). A person is said to be included on one of the categories from the category 6 based on their preferences for each of these dimensions.

2. Kolb Learning Style

This learning style model developed by Kolb learning style students based on the four stages cycle/dimensions. I.e. the dimensions of concrete experience, reflective observation, abstract conceptualization, and active experimentation. While the learning styles Kolb model which is a combination of two dimensions are: *converger* (active experimentation-abstract conceptualization), *diverger* (reflective observation-concrete experience), accommodator (active experimentation-concrete experience), and the assimilator (reflective observation-abstract conceptualization).

3. Felder Silverman Learning Style

This learning style model developed by Richard Felder and Linda Silverman that combines the 5 dimension, 2 of which is a replication of models of learning styles Kolb and Myers-Briggs. More specifically, the dimensions of perception (sensing/intuitive) analogous with the perception on Kolb and Myers-Briggs. The dimensions of the process (active/reflective) is also found in Model Kolb. Felder-Silverman positioning 3 dimensions additional input (visual/verbal), organizations (inductive/deductive), and understanding (sequential/global).

In the meantime, this research using learning styles Kolb's model. According to Ramadan, et al. (2011:1), this learning style is based on the theory of experiential learning where learning is the process of formation of knowledge through the transformation of experience students in formal learning acquired in school. Thus there is a link between learning with learning mathematics in school.

So after the students identified of their learning style type according to Kolb, students are expected to be able to customize the learning process in accordance with their learning style so that students become more confident, successful, and easy to learn. Further explanation regarding the dimensions/stage study on learning styles Kolb model according to Kolb as quoted by Montgomery & Groat (1998:1-5) are as follows.

a. Concrete Experience (CE)

This phase focus on student involvement in daily situations, concrete experience, imaginative, and innovative. The ability to be open-minded and flexible to making changes is very important when learning. In a nutshell, concrete experience is a stage where the learning process is obtained by using the senses.

b. Reflective Observation (RO)

At this stage, students understand the ideas and conditions of different viewpoints. Students have a tendency toward patience, its object, and meticulous consideration but they chose not to take action. In short, this stage is a stage where the learning process is obtained through observation or by paying attention to a problem (watched/watching).

c. Abstract Conceptualization (AC)

Learning involves the use of logic and ideas than simply feeling when understanding the situation and solve the problem. Systematic planning and development of the theories and ideas for solving problems considered in this

stage. In short, this stage is a stage where the learning process is obtained through a process of thinking (thinking).

d. Active Experimentation (AE)

Students began to become active at this stage. There is a practical approach that what is actually done is important. In essence, this stage is a stage where learning was gained by the doing.

Furthermore, Kolb asserts that most people get through this phase in the phase sequence of the concrete experiences (real experience), reflective observation, abstract conceptualization, and active experimentation. This means that students have real experience, then observe and then reflecting on her from a different point of view, then formed the concept of abstract and generalized into the theories and finally actively experiencing the theories and test what they have learned in a complex situation. While the four types of Kolb's learning styles are .

a. Converger

This group was made up of those who had the highest score in the Abstract Conceptualization and Active Experimentation (AE). The greatest strength of converger is the practical application of ideas. They are very nice when there is a single correct solution of a problem and they can be centered on a problem or a particular situation. Research on learning style indicates that people with this type of learning style is relatively heartless converger, prefer to deal with objects rather than human beings.

b. Diverger

This group was made up of those who had the highest score in a Concrete Experience (CE) and Reflective Observation (RO). Diverger has characters that are the opposite of converger. Their greatest strength lies in the ability of their imagination and creativity. They were able to see the real situation from many points of view and bring up ideas. Research shows that people with learning style diverger interested in humans and tend to their imagination and emotional.

c. Assimilator

This group was made up of those who had the highest score in the Abstract Conceptualization and Reflective Observation (RO). Assimilators are capable of and understand the theory. They are good in inductive reasoning and unify the varied ideas and observations into a unified whole. As converger, they are less interested in people and pay more attention to the concepts that are abstract, but little regard for the practices of the utility of existing theories. More important for them is that a theory be logical and precise, in a situation where a theory or plan does not correspond to reality.

d. Accomodator

This group was made up of those who had the highest score in a Concrete Experience (CE) and Active Experimentation (AE). Accommodator form opposite the assimilator. They are good at executing plans and experiments and involve themselves in new experiences. They risk takers and excelled in situations that require quick decisions and adaptations. They often solve the problem with an

experiment of trial and error, relying on very to others to obtain information. Accommodator happy with those but looks impatient and ambitious.

E. Overview of Surface Area and Volume of Cube and Cuboid Matter

Material on the surface area and volume of cubes and cuboid:

a. Surface Area of Cube

For every cube that its edges is s, then :

$$\boldsymbol{Surface\ Area\ of\ Cube = 6 \times s^2 = 6s^2}$$

b. Surface Area of Cuboid

For every cuboid that its length = p, width = l, and high = t, then :

$$\boldsymbol{Surface\ Area\ of\ Cuboid = 2\,pl + 2\,pt + 2\,lt\ atau}$$
$$\boldsymbol{= 2\,(pl + pt + lt)}$$

c. Volume of Cube

For every cube that its edges is s, then :

$$\boldsymbol{volume\ of\ Cube = s \times s \times s = s^3}$$

d. Volume of Cuboid

For every cuboid that its length = p, width = l, and high = t, then :

$$\boldsymbol{volume\ of\ Cuboid = p \times l \times t = plt}$$

F. Relevant Research

1. Zulfadli (2016) with the research on "Mathematical problem solving Ability Descriptions based on Steps of Polya learning style Students of Class XI MIA SMA Negeri 3 Sengkang".

2. Prasetyo (2013) and research entitled "analysis of the behavior problem solving question of Itinerant Story and wide Circles through the stages of the Analysis Error Newman on Grade IX H 228 2 Unfortunate" identification of problem solving behavior acquired students at match results Pape (2004), which is the Direct Translation Approach-Proficient (DTA-Proficient), Direct Translation Approach-Not Proficient (DTA-Not Proficient), Direct Translation Approach-Limited Context (DTA-Limited Context) , Meaning-Based Approach-Full Context (MBA-Full Context and Meaning-Based Approach-Justification (MBA-Justification), it turns out there is one behavior that does not show up i.e. Meaning-Based Approach-Justification (MBA-Justification) and there are behaviors that exist outside of the category of Pape, but between the behavior of Direct Translation Approach-Proficient (DTA-Proficient) and Direct Translation Approach-Limited Context (DTA-Limited Context), which is the Direct Translation Approach-Proficient (DTA-Proficient Plus) so that it can be stated that there are 5 categories that appear are:

a. Direct Translation Approach-Proficient (DTA-Proficient-Pure)
b. Direct Translation Approach-Proficient (DTA-Proficient-Plus)
c. Direct Translation Approach-Not Proficient (DTA-Not Proficient)
d. Direct Translation Approach-Limited Context (DTA-Limited Context)
e. Meaning-Based Approach-Full Context (MBA-Full Context)

While errors in the error analysis of the stages of newman's most widely performed was at the stage of Comprehension, transformation and Encoding. At this stage of the reading and process skill not many students have difficulties.

3. Ramadan, et al. (2011) and the study entitled "An Investigation of The Learning Style of Prospective Educators" retrieved that learning style students studying in different departments is highly variable. For some majors, learning style converger very dominant. Additionally obtained the conclusion that students who come from the same Department have the same dominant learning style.

G. Framework

Problem solving is one of the components of the mathematics that are important in the study related to the stage of resolving the problem. This is because the everyday life of human problems. So the human need to find a solution so as not to be defeated by life.

Although the resolution is very important, but the ability of problem solving students are still lacking. This is apparent from the results of the PISA and TIMSS, research results and an interview with one of the teachers of mathematics. The results of the PISA (Program for International Student Assessment) shows that the number of students who are able to carry out procedures and problem-solving strategies in less than the number of students who are able to work on using the formula. In addition, the results of TIMSS (Trends in International Mathematics and Science Study) shows that the ability of problem solving Indonesia's students are still substandard. Based on research and interviews with one of the teachers of mathematics, retrieved that students still have difficulties in solving mathematics problems.

The lack of ability of mathematical problem solving of students became the whip to the world of mathematics education. Teachers should endeavour to make the effective learning of students as a problem solver. Teachers can guide students in order to build their own knowledge, as well as looking for problem solving.

On solving a problem, the most important besides result or problem solving is the process. In the process of problem solving students must have a way of thinking, habits and curiosity to solve these problems. Observe and describe the behavior of the students when completing a mathematics story problem ranging from re-reading, conclude, ask and transforming sentence structures to improve their understanding. So the behavior observed in this study is the student behavior while working on mathematics story problem in systematic, then the behavior characteristics are classified based on Pape.

A lack of problem-solving ability students also are affected by several factors such as learning styles, to the dismay of mathematics instruction, lack of self-confidence, trust teachers, lack of attention to the environment, the elderly, as well as gender. As for the style of learning is one of the factors that are important and closely related to the student. Because each student has different learning style. For example, in class VIII, found students who have learning style diverger, accommodator, converger, and assimilator. It then becomes very important for teachers to analyze the student's learning style and figure out which causes a lack of problem-solving ability of the students. Because of the type of style mathematics. Problem-solving ability of students of different learning can lead to

problem-solving ability is less and the difference types of learning styles of students needs to be examined further.

CHAPTER III

RESEARCH METHODS

A. Approach and Kinds of Research

1. Research Approach

This study used a qualitative approach. This research requires the presence of researchers on site research. The presence of researchers on site research is preferred because the data collection should be implemented in a real situation and researchers is the main instrument. The main instrument means researchers as planners, implementers, controller, collector and Analyzer data, towing and conclusions report. As planners, researchers prepare everything related to research that is making plans of teaching and research tools are needed in data collection. As the implementing actions i.e. researchers themselves who teach and implement the actions.

As controller, researchers control and supervise the process of learning that goes on from start to finish during the study. In addition, researchers also act as data collectors, data Analyzer, towing and conclusions of the report. On the activities of observation and data collection, researchers acted in full. Researchers will collect all the necessary data from the subject i.e. test results data of problem solving behavior and the results of the deep interview.

This research seeks to uncover the nature of the symptoms that arise from the subject of the research. The fact is used to formulate the problem solving behavior of students with the learning styles of students. The nature of qualitative

methods use i.e. searching for interview behavior problem solving. The time of the interview, the researcher is acting as a neutral observer of the (observer), which aims to be able to deal directly with the informant to better know about the learning styles of students and student problem solving behavior naturally with clear and no doubt. It is also to minimize the presence of contamination or influence from the mind of the interviewer.

The data is taken in accordance with the fact that occurred in the study (natural setting). Researchers in conducting this research involved and interact directly with students who become the subject of research on learning in the classroom.

The data collected in this research is descriptive in nature, i.e. the actual explanation regarding the classification of types of learning styles of students and student problem solving behavior description for each learning style. The resulting data would later be either words or sayings that are obtained from the results of the interview and the writing or the number obtained from the results of the interview. Qualitative research would produce descriptive data in the form of the written word or spoken and behavior from someone who observed.

Data analysis is done inductively. Data obtained in the research collected, grouped according the category, analyzed, abstracted thus generating a new theory about the classification of learning styles types of grade VIII SMPN 30 Makassar students and description of the behavior of students with problem solving types of learning styles of students.

This study emphasizes the student's problem solving process rather than the end result of this aspect of the problem-solving behavior. Problem solving behavior of students and learning styles of the students is the focus of this research and will be retrieved with the students learning style type classification description of problem-solving behavior of students.

Based on the above explanation then research it had the characteristics of qualitative research that is the main instrument, as a researcher using qualitative methods, has the natural setting, is descriptive, inductive data analysis, and more concerned with process than results. Therefore, this research approach was qualitative approach.

2. Kinds of Research

Type of this research is descriptive-qualitative one, that depicts or describe events that became the center of attention (problem-solving behavior, learning style students) qualitative and based on qualitative data. The resulting data would later be either words or sayings that are obtained from the results of the interview and the writing or the number obtained from the results of the interview. Based on a qualitative approach in this study, all the good facts of writing or verbal from human data sources that have been observed and other related documents that describe then concise as possible examined to answer the problem.

B. Research Location

This research was carried out in SMPN 30 Makassar addressed on Street Tamalanrea Raya, Tamalanrea, city of Makassar, South Sulawesi 90245, Indonesia. The reason the retrieval location in SMPN 30 Makassar due to the distance factor and the initial observation experience i.e. researchers ever do an interview about the State of the schools and the State of the disciples of SMPN 30 Makassar, so that the initial description of the character of the students already known. Location of SMPN 30 Makassar which only took 10-15 minutes from the home location of the researchers expected to give ease and effectiveness in research.

C. Subject and Object of Research

Subject of the study is that intended for researched. The object is the foundation or be a point of attention in research. In this research that became the subject of research is the entirety of learners class VIII SMPN 30 Makassar semester II in 2017/2018 lessons, which became the object of research, that is Profile Mathematics Problem-Solving Behaviour Based on Students' Pape Classification with Their Learning Style on Grade VIII SMPN 30 Makassar.

D. Informant of Research

Informant of research in the qualitative related how the steps is a researcher so that data or information can be acquired, then it is possible to use qualitative research in three ways, namely the purposive procedure, the procedure and the procedure of quotas, snowball (Snowball).

In this study, researcher obtained the informant research using the purposive procedure. Purposive procedure is one strategy to determine the most common informants in the qualitative research, that determine participants who become informants in accordance with the selected criteria that are relevant to specific research problems.

E. Procedure of Data Collection

The procedures used to collect the data at the time of the study are as follows:

1. Instrument Preparation

a. Instrument of Learning Style Question Form

The research on student learning styles will be measured with instruments in the form of the now KLSI (Kolb Learning Style Inventory). KLSI is a list of statements which consists of 4 columns. Each column is calculated his score. As for the columns are as follows.

Column 1: dimensions of CE (concrete experience).

Column 2: dimensions of AE (active experimentation).

Column 3: dimensions of AC (abstract conceptualization).

Column 4: dimensions of RO (reflective observation).

Meanwhile, the scoring guidelines from the Kolb Learning Style Inventory as follows.

1 score: (less appropriate) with students when learning.

2 score: (rather appropriate) with students when learning.

3 score: (fit) with students when learning.

4 score: (very appropriate) with students when learning.

b. Instrument of Problem-Solving Behaviour Test

The steps for preparing the instrument test problem solving behavior is as follows: (1) make the lattice problem; (2) devise a matter accordance to latticework; (3) determine the assessment criteria; (4) consult reserved to the supervisor; (5) test the validity of the test to the validator; (7) revise the question tests.

c. Instrument of Interview

The preparation of instruments guidelines interviews conducted with reference to the stage of problem solving according to students' work. Interview questions aimed to know the description of the behavior of the student's problem solving.

2. Validation

Validation is performed against the following instruments: (1) the student's learning style question form, (2) test problem solving behavior, and (3) guidelines for the interview.

There are three kinds of validity which will be validated in this study, namely the validity of the content, invalid constructs, and empirical (internal). The

validity of the content of the review of the accuracy of the theories used as reference materials, the accuracy of the material that is used to identify the learning styles of students, as well as make problem-solving behavior interview questions. The validity of invalid constructs review about accuracy or logical of the items now being used, as well as questions on the interview behavior problem solving. The validity of the contents and invalid constructs will be carried out by experts who have sufficient knowledge and experience in their fields each.

The empirical validity of the (internal) was developed in accordance with the reality in the field was observed, the suitability of the items on the adopted learning styles, as well as behavioral interview questions on problem solving. The validity of the empirical research is demonstrated by the existence of real evidence that there are students who occupy each type of learning style with a pre-research activities through the now learning style students according to Kolb.

3. Observations of Students' Learning Process

Observations of the student learning process is a means to know the student's learning style. This observation in class VIII conducted three times.

4. Implementation of Filling Learning Styles Question Form

Filling learning styles according to Kolb held 2 times. The first implementation will be carried out at the time of pre-research. Pre-research is carried out with the intention of knowing the whereabouts of the individuals in each type of learning style. Whereas the implementation of the second, exercised at the time of research, as a class of research.

5. Test of Problem-Solving Behavior

Problem-Solving behavior tests students are given a written test is in the form of descriptions. The test to be tested have been validated by the previous validators. At the time of the execution of the test, students are not allowed to open the book of mathematics that they bring, and should not be working with classmates.

6. Interview

Interviews required to get in-depth information and support regarding what has been obtained from the tests are written. The interview is conducted by students ' answers. To avoid so that no data is missed then the recorder used to record all the information during the interview.

Once defined by two subjects for each learning style, and then held against the subject of the interview. The interview was carried out after there is agreement between researcher and subject, and implemented in successive days. After the interviews, the students are asked not to divulge the content of the interview to a friend. This is done so that the data obtained in accordance with knowledge and understanding of each student.

7. Field Note

The field note is meant to complement the data specified in the written tests and interviews that are important.

F. Data Analysis Techniques

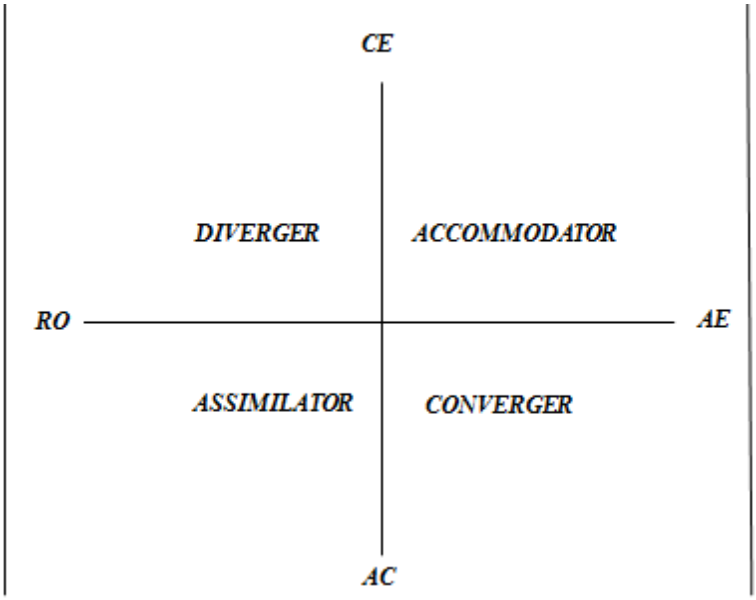
Qualitative data analysis is an effort made by way of working with data, organizing data, shorting into a unit that can be managed, synthesize, search and find patterns, find what is important and what is learned, and decide what can be narrated to others. Based on the definition above it can be concluded that the initial steps of data analysis is collecting the data, compiled systematically, and then presented the results of his research to other people. In this reasaerch, researchers using descriptive data analysis strategy-qualitative and carried out in inductive.

1. Data Analysis of Learning Styles Question Form

After the students fill out the question form of learning styles, then the next step is to analyze the data to identify the learning style question form and classify the type of student's learning style. This step is performed with guided there Kolb Learning Style Inventory. The CE score is obtained from the sum of all the score statement on the first column, the RO score obtained from summation of all score statement on the second column, the AC score obtained from summation of all statements on the third column, and score AE obtained from summation of all score the fourth column in the statement.

A person's learning style known by searching the score combinations, i.e. by calculating the score is reduced by the AE score CE as well as score AC reduced score CE. According to Kolb as quoted by Cavas (2010:48) learning style

that accordance with someone can be indicated by plotting combinations score as in the picture.



Picture 3.1. According to Kolb's learning style Plotting (Cavas, 2010:48)

Explanation the picture above is as follows.

a. If the results of the score for AC reduced score for CE marked positive and AE score minus RO score marked positive, then corresponding learning style is Accommodator.
b. If the results of the score for AC reduced score CE marked positive and AE score minus RO score marked negative, then corresponding learning style is Diverger.
c. If the results of the score for AC reduced score CE marked negative and AE score minus RO score marked negative, then corresponding learning style is Assimilator.

d. If the results of the score for AC reduced score CE marked negative and AE score minus RO score marked positive, then corresponding learning style is Converger.

After knowing the types of learning styles of each student, the next step is to classify the students who have the same type of learning style. This will be used to help describe the behavior of the student problem solving with each type of learning style.

2. Data Analysis of Problem-Solving Behavior Test

Data analysis of problem-solving behavior test of students mathematics is done based on steps of students working on a matter as they understand, then the researcher discovering the characteristics of problem-solving behavior in the students on each question. Subsequent researcher identifies findings and describes the characteristics of problem-solving behavior. From the description of the characteristics of the problem solving behavior researchers classify behaviors accordance with Pape's classification.

3. Data Analysis of Interview

Data analysis of interview conducted with the following steps.

1. Data Reduction

Data reduction is an activity that refers to the process of the election, attention, concentration, simplification, abstraction and the transformation of raw data in the field. If there is data that is not valid, then the data it gathered itself and may be used as a by-product or other verification

2. Data Exposure

Data exposure include classification and identification data, i.e. write data sets are organized and categorized making it possible to draw conclusions from the data.

3. Drawing conclusions from the data that has been collected and verified these conclusions.

Results of interview analysis will be used as triangulation analysis results against tests and used to describe the behavior of the student problem solving with each type of learning style. Data analysis was done using the method of proportions (The Constant Comparative Method). This analysis involves comparison of one segment by another segment to determine similarities and differences. The data are grouped together in the same dimension. These dimensions are tentatively given a name, which later became the category. This analysis sought in order for the empirical elements that distinguish the comparison units are on the same data. Units that have the same characteristics was appointed theories.

G. Data Validity

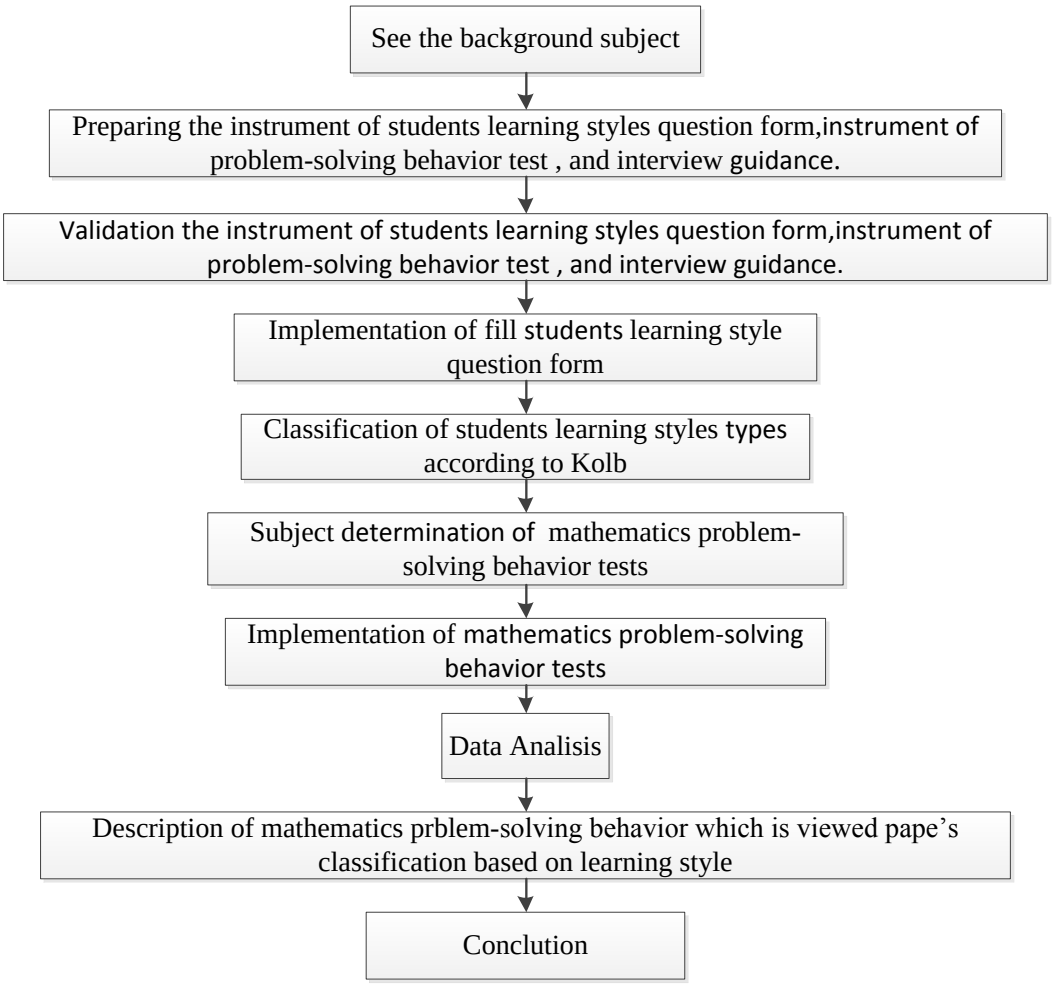
Validity of data needs to be done to test the validity of the data. This research uses the triangulation in test of its validity. The technique of triangulation is a technique checks the validity of the data that utilizes something else outside of that data for the purposes of checking or as a comparison towards the data.

Triangulation was done on this test is the triangulation method that is comparing data of the test students, observation, and interviews. If the data from

the three different be correlated retrieved the same understanding, then the data is considered to be valid until the conclusion can be drawn about the data. If the data is invalid, the researcher may dispose of such data and do research back or invalid data such as the findings in the study.

H. Steps of Research

In general steps in this study can be seen in the following figure.



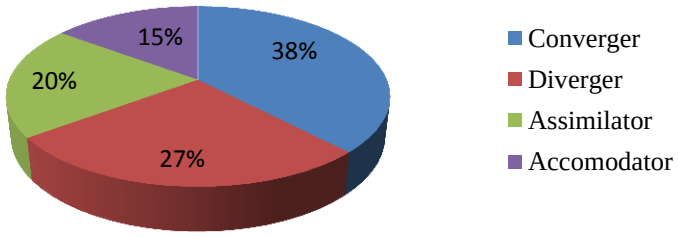
Picture 3.2. Steps of Doing Research

CHAPTER IV

RESULTS AND DISCUSSION

A. Research Results

Based on the results of learning style questionnaire found the students of class VIII.1 and VIII.2 SMP Negeri 30 Makassar have different types of learning styles. The dominant type of learning style is the type of learning style converger as much as 28 students or 38% of students of class VIII.1 and VIII.2 SMP Negeri 30 Makassar. Then the type of learning style diverger as much as 20 people or 27%, assimilator as many as 15 students or 20%, and accomodator as many as 11 students or 14.86%.



Picture 4.1. Chart of Learning Style In Class VIII.1 and VII.2 of SMPN 30 Makassar

Here are the exposure of learning style data in class VIII.1 and VIII.2 SMP Negeri 30 Makassar.

Table 4.1. Student Learning Style Class VIII SMP Negeri 30 Makassar

No.	Class	Name	CE	RO	AC	AE	AC - CE	AE - RO	Type
1	VIII. 1	AANF	25	32	35	28	10	-4	Converger
2		ALS	18	34	36	32	18	-2	Converger
3		AZAT	30	32	23	35	-7	3	Assimilator

4		ASR	31	29	25	35	-6	6	Assimilator
5		SASS	31	28	29	32	-2	4	Assimilator
6		CRJ	31	29	30	30	-1	1	Assimilator
7		FW	22	37	27	34	5	-3	Converger
8		JFB	32	34	23	31	-9	-3	Accomodator
9		NF	38	38	40	39	2	1	Diverger
10		NFAK	31	33	26	30	-5	-3	Accomodator
11		SCON	19	35	36	30	17	-5	Converger
12		PR	25	32	36	27	11	-5	Converger
13		RA	39	24	23	34	-16	10	Assimilator
14		RAA	30	30	27	33	-3	3	Assimilator
15		SRA	24	37	28	31	4	-6	Converger
16		SA	30	30	32	28	2	-2	Converger
17		SWMD	39	29	20	32	-19	3	Assimilator
18		ZPK	29	32	26	33	-3	1	Assimilator
19		AAS	20	32	32	36	12	4	Diverger
20		ARR	16	30	35	39	19	9	Diverger
21		AZFP	32	27	27	34	-5	7	Assimilator
22		AAM	21	36	32	31	11	-5	Converger
23		DAI	23	35	34	28	11	-7	Converger
24		DPAA	16	28	37	39	21	11	Diverger
25		FSAP	27	30	34	29	7	-1	Converger
26		MFPP	30	27	31	32	1	5	Diverger
27		MAR	29	32	30	29	1	-3	Converger
28		MASR	26	30	34	30	8	0	Diverger
29		MHAJ	19	39	29	33	10	-6	Converger
30		NA	36	22	33	29	-3	7	Assimilator
31		PAFR	14	27	37	43	23	16	Diverger
32		ZN	38	40	36	38	-2	-2	Accomodator
33		IBN	26	35	28	30	2	-5	Converger
34		RCR	36	27	30	27	-6	0	Assimilator
35		MR	15	24	21	26	6	2	Diverger
36		AW	27	31	35	27	8	-4	Converger
37		MRK	29	34	29	28	0	-6	Converger
38	VIII. 2	ANAWR	30	30	34	26	4	-4	Converger
39		ADG	25	32	35	28	10	-4	Converger
40		AKHG	33	34	28	25	-5	-9	Accomodator
41		ANA	29	33	30	28	1	-5	Converger
42		SDIV	25	27	30	38	5	11	Diverger
43		ATLD	28	33	31	28	3	-5	Converger
44		ADS	27	26	33	34	6	8	Diverger

45		AMZ	28	33	38	21	10	-12	Converger
46		BDP	27	32	30	31	3	-1	Converger
47		DT	28	29	25	38	-3	9	Assimilator
48		DAM	24	35	28	33	4	-2	Converger
49		MAT	24	38	29	29	5	-9	Converger
50		NAA	25	31	31	33	6	2	Diverger
51		NCSJ	37	22	26	35	-11	13	Assimilator
52		SACC	29	34	26	31	-3	-3	Accomodator
53		SAR	38	41	41	44	3	3	Diverger
54		SAM	35	25	21	39	-14	14	Assimilator
55		SW	22	31	33	34	11	3	Diverger
56		ZKT	23	31	32	34	9	3	Diverger
57		AFP	31	32	28	29	-3	-3	Accomodator
58		ASAG	30	32	24	34	-6	2	Assimilator
59		AND	36	33	22	29	-14	-4	Accomodator
60		AW	31	29	30	30	-1	1	Diverger
61		BK	29	37	26	28	-3	-9	Accomodator
62		DP	29	29	29	33	0	4	Diverger
63		MPR	24	32	33	31	9	-1	Converger
64		MSS	23	32	36	29	13	-3	Converger
65		MFIU	32	27	32	29	0	2	Diverger
66		MKAR	22	36	31	31	9	-5	Converger
67		MAA	17	22	30	36	13	14	Diverger
68		NK	33	25	35	27	2	2	Diverger
69		RY	31	32	26	31	-5	-1	Accomodator
70		SP	28	33	37	22	9	-11	Converger
71		TNM	36	22	31	31	-5	9	Assimilator
72		FW	31	35	29	25	-2	-10	Accomodator
73		AAA	21	32	36	31	15	-1	Converger
74		AMRA	27	29	32	32	5	3	Diverger

After classified according to the learning style, from 74 students who were given a questionnaire selected four students who became subjects of research. The selection of this subject is assisted by teacher of mathematics subjects in class VIII.1 and VIII.2. To obtain valid data about students' mathematical problem solving behavior in each learning style, data triangulation is done, that is by

aligning the student's problem analysis analysis and the analysis of the interview result. Here is an analysis of the three types of learning styles.

1. Data Analysis of Mathematics Problem-Solving Behavior of Converger Student

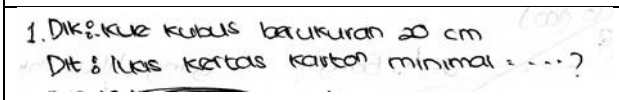
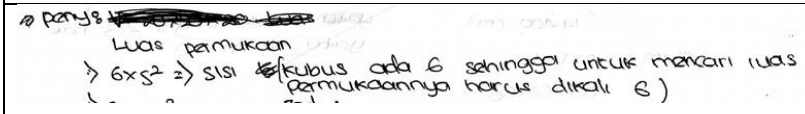
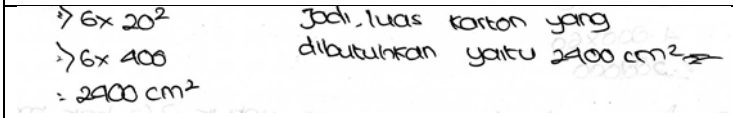
a. Problem of Surface area of Cube

Mrs. Hasan mades a cube cake with size 20cm x 20cm x 20cm. If she will put the cake into cardboard made of paperboard. What is the minimum paperboard area needed by Mrs. Hasan?

1) Data Exposure of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cube

a) Data of Problem-Solving

Table 4.2. Data of Problem-Solving of Converger Student in Problem of Surface area of Cube

Data of Problem-Solving	Code
 1. Dik: kue kubus berukuran 20 cm Dit: luas kertas karton minimal = ...?	CM1T1
 Luas permukaan => 6×s² => sisi (kubus ada 6 sehingga untuk mencari luas permukaannya harus dikali 6)	CM1T2
 => 6× 20² => 6× 400 = 2400 cm² Jadi, luas karton yang dibutuhkan yaitu 2400 cm²	CM1T3

b) Data of Observation

Table 4.3. Data of Observation of Converger Student in Problem of Surface area of Cube

Student Activities	Code
(1) Student reading the whole sentence of problem.	CM1K1

(2) Student writing the information in the problem without reading again the problem	CM1K2
(3) Student writing the formula "6 X s^2", giving little information "There are 6 sides of cube so to find the surface area should be multiplied by 6 "	CM1K3
(4) Students without re-reading the problem directly do the calculation "6 multiplied by 20 power 2, 202 equal to 400, so 6 times 400 equal to 2400"	CM1K4
(5) Students write the final answer "So, the required carton area is 2400cm^2"	CM1K5

c) *Data of Interview*

PM1W1 : Jadi pertama kakak mau tanya seputar hasil jawabanta dari soal yang kakak kasih. Waktunya tadi kita kerjakan soal nomor 1 kita baca ulang – ulang soalnya atau tidak ?

CM1W1 : Tidak

PM1W1 : Jadi satu kali baca langsung meki kerja ?

CM1W1 : iya

PM1W1 : Jadi satu kali baca langsung meki paham soalnya ?

CM1W1 : Iya

PM1W2 : Kalau begitu kakak mau tanya, ini maksudnya 20 cm x 20 cm x 20 cm, apa maksudnya ini dek ?

CM1W2 : Panjang rusuknya, rusuk kubus

PM1W3 : Selanjutnya dek, ini kenapa pakai rumus 6 x s^2?

CM1W3 : Karena kubus ada 6 sisi nya, jadi enam kali sisinya untuk keseluruhan luas permukaannya.

PM1W3 : s^2? Maksudnya itu sisi kuadrat atau apa?

CM1W3 : Iye kak s itu sisi.

PM1W3 : Oh yang lebih tepatnya dek 6 kali sisi, karena kan sesuai tadi pernyataanta ada 6 sisinya, nah sedangkan sisi itu hasil dari rusuk x rusuk atau r^2. Jadi rumus yang lebih tepatnya untuk cari luas permukaan kubus 6 x s atau 6 x r^2.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of converger student in surface area of cube problem.

- Not re-read the problem (read once) , based on data of CM1K1, CM1K2, CM1K4, CM1W1, and CM1W1.
- Write down the information that is known and asked, but not quite right, based on data of CM1T1.
- Using the context information of the problem in the calculation but limited, based on data of CM1T2, CM1K3, CM1W2, and CM1W3.
- Write down the final answer to the solution, based on data of CM1T3, and CM1K5.
- There are explanation in the mathematical step but limited, based on data of CM1T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cube

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of Converger Student in Surface area of cube problem is Direct Transalation Approach in sub category DTA-Limited Context.

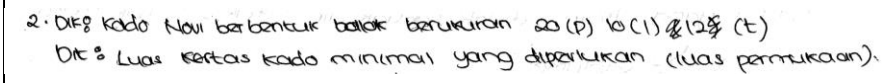
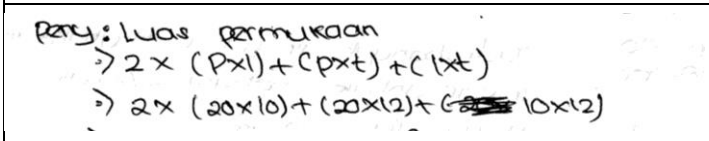
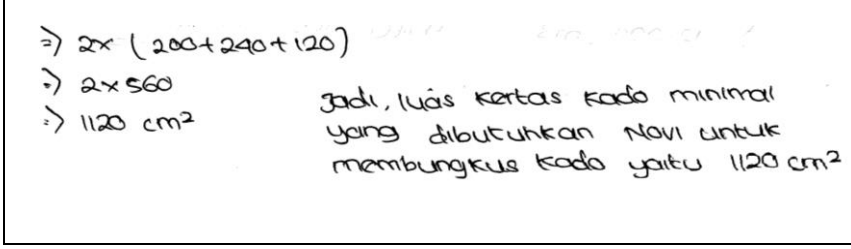
b. Problem of Surface area of Cuboid

Novi will wrap her gift with wrapping paper. Novi's Gift shaped cuboid with measuring 20cm x 10cm x 12cm. Determine the minimum wrapping paper area needed to wrap the gift!

1) Data Exposure of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cuboid

a) Data of Problem-Solving

Table 4.4. Data of Problem-Solving of Converger Student in Problem of Surface area of Cuboid

Data of Problem-Solving	Code
	CM2T1
	CM2T2
	CM2T3

b) Data of Observation

Table 4.5. Data of Observation of Converger Student in Problem of Surface area of Cuboid

Student Activities	Code
(1) Student reading the whole sentence of problem.	CM2K1
(2) Students read back the second and third sentences, then record the information (write down what is known and asked).	CM2K2
(3) Students write the formula of the surface area of the cuboid (the formula that he already memorized), the writing of the formula is less precise.	CM2K3
(4) Students reread the second sentence on the matter, then write down "$2 \times (20 \times 10) + (20 \times 12) + (10 \times 12)$"	CM2K4
(5) he student starts the calculation "20 multiplied by 10 equal to 200, 20 multiplied by 12 equals 240, 10 multiplied by 12 equals 120", "200 plus 240 plus 120 equals 560" then "2 times 560 equals 1120"	CM2K5
(6) Students write down the final answer "So, the minimum wrapping paper required Novi to wrap the present gifts 1120cm^{2}"	CM2K6

c) Data of Interview

PM2W1 : Terus liatki lagi pekerjaan ta di, lanjutki nomor 2. Kalau ini di dalam soal 20 cm x 10 cm x 12 cm itu apa ?

CM2W1 : Tinggi

PM2W1 : Yang mana tinggi ?

CM2W1 : 12 cm

PM2W1 : Terus yang 20 cm dan 10 cm itu apa ?

CM2W1 : 10 cm itu lebar , 20 cm panjang

PM2W1 : Ini apa ini yang 20 x 10 x 12 ?

CM2W1 : Rumus untuk mencari volume balok, panjang x lebar x tinggi

PM2W1 : Apa yang ditanyakan yang nomor 2 ?

CM2W1 : Luar kertas kado, minimal yang digunakan untuk membungkus kado

PM2W1 : Jadi kalau di dalam matematikanya ini apa yang di cari ?

CM2W1 : Luas permukaannya, luas permukaannya kertas kado

PM2W1 : Kertas kadonya itu bentuknya apa ?

CM2W1 : Balok

PM2W2 : Jadi ini kita pakai rumus 2 x (p x l) + (p x t) + (l x t) ? Kita tahu kenapa bisa begitu rumusnya?

CM2W2 : Karena begitu ji kak nakasi tau ka guru ku kalau mau cari luas permukaan, jadi langsung mi saja ku pakai baru ku masukkan mi angkanya seperti yg ku tulis di diketahuinya.

PM2W3 : Oh begitu.Terus ini disini di nomor 2 kenapa 1120 cm^2 apa yang di maksud pangkat 2 di centimeternya ?

CM2W3 : Kalau yang dicari di nomor 2 luas permukaan, terus kalau luas permukaan pakai pangkat 2 kalau mencari volume pangkat 3.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of converger student in surface area of cuboid problem.

- Re-read the problem, based on data of CM2K2 and CM2K4.
- Write down the information that is known and asked, based on data of CM2T1.
- Using the context information of the problem in the calculation but limited, based on data of CM2T2, CM2K4, CM2K5, CM2W1, and CM2W2.

- Write down the final answer to the solution, based on data of CM2T3.
- There are explanation in the mathematical step but limited, based on the data CM2T2, CM2W2, and CM2W3.
- Write down the final answer to the solution, based on data of CM2K6.

3) Data interpretation of Mathematics Problem-Solving Behavior of Converger Student in Problem of Surface area of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of converger student in surface area of cuboid problem is Direct Transalation Approach in sub category DTA-Limited Context.

c. Problem of Volume of Cube

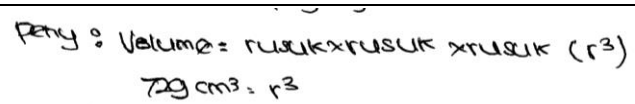
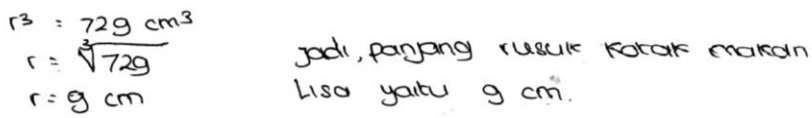
Lisa has a box of cube. Lisa wants to fill the box until it's full of 729cm^3 rice. Determine edge length of the lisa's food box!

1) Data Exposure of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume of Cube

a) Data of Problem-Solving

Table 4.6. Data of Problem-Solving of Converger Student in Problem of Volume of Cube

Data of Problem-Solving	Code
3. Dik : Lisa memiliki kotak berisi makanan penuh dengan 729 cm^3 nasi Dit : Tentukan panjang rusuk kotak makanan Lisa.	CM3T1

	CM3T2
	CM3T3

b) Data of Observation

Table 4.7. Data of Observation of Converger Student in Problem of Volume of Cube

Student Activities	Code
1) Student reading the whole sentence of problem.	CM3K1
2) Students reread the second and third sentences, then record the information (write down what is known and asked).	CM3K2
3) Students write the formula of the volume of the cube.	CM3K3
4) Students reread the second sentence on the question.	CM3K4
5) The student starts the calculation "729 cm^3 = r^3, r^3 = $\sqrt[3]{729}$" 6) Students are confused to get results from $\sqrt[3]{729}$, then take the scratch paper and look for the results $\sqrt[3]{729}$ by trying to figure out which numbers are cube is 729.	CM3K5
7) The student writes the final answer "So, the edge length of the lisa's food box 9 cm"	CM3K6

c) Data of Interview

PM3W1 : Lanjut di nomor 3, kalau di nomor 3 langsung jki satu kali baca baru langsung jawab ?

CM3W1 : Tidak kak, karena waktu ku baca semua ki dulu, baru pas lagi ku kerja kerja mi kubaca ulangki untuk ku pastikan ini yang mau dicari pakai rumus volume betulan ji kah.

PM3W2 : Ini nomor 3, apa yang di tanyakan ?

CM3W2 : Panjang rusuk kotak makanan lisa

PM3W3 : Apa yang kita tahu dari soal nomor tiga ini?

CM3W3 : 729cm^3 nasi untuk penuhiki kotak makanannya lisa samaji bilang itu volume fullnya kubus kak

PM3W4 : Ada yang lain?

CM3W4 : Terus mau ki dicari panjang rusuk kotak makanannya

PM3W5 : Jadi bagaimana cara carinya dek?

CM3W5 : Pakai itu kak rumus volume kubus, bedanya ini ditau mi volumenya, jadi itu mi 729cm^3 = rusuk x rusuk x rusuk. Jadi bisa ma cari ki rusuknya langsung.

PM3W6 : Terus kenapa itu bisa ada akar pangkat tiga dari 729, dan darimana dapat 9?

CM3W6 : Hmmm.. anu kak, kan r pangkat tiga ki, na r ji saja yang mau dicari, makanya hanya untuk dapatkan r saja harus ku akar pangkat tiga ki. Kalau sembilannya hasil dari coba coba ka, karena yang ku tahunya itu 53 = 125, nah masi jauh ki dari 729, kalau 103= 1000, justru kelebihan, tp sedikit mami lebihnya, jadi ku cobami 93, ternyata hasilnya 729. Jadi itumi akar pangkat tiga dari 729, yah 9, dan itu mi juga kak panjang rusuk kotak kubus atau kotak makannya lisa.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of converger student in volume of cube problem.

- Re-read the problem, based on data of CM3K2, CM3K4, and CM3W1.
- Write down the information that is known and asked, based on data of CM3T1.
- Using the context information of the problem in the calculation, based on data of CM3T2, CM3K5, CM3W2, and CM3W3.
- Write down the final answer to the solution, based on data of CM3T3, and CM3K6
- There is an explanation in mathematical steps that fit the context but do not give a reason, based on data of CM3T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume Cube

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of Converger Student in Problem three is Meaning Based Approach in sub category *MBA – Full Context*.

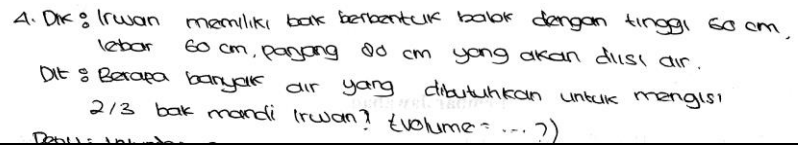
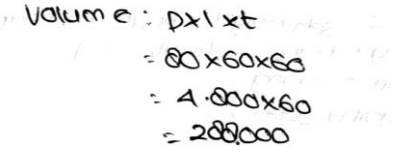
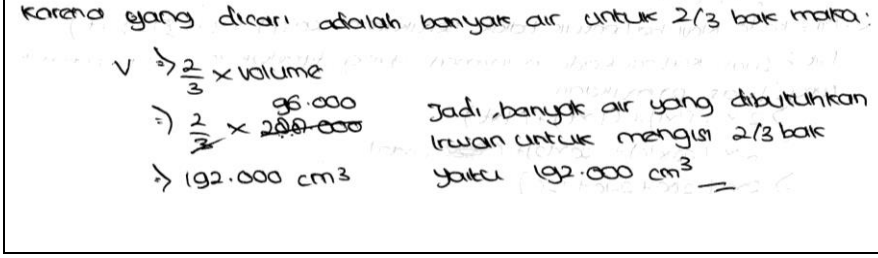
d. Problem of Volume of Cuboid

Irwan has a bathtub shaped cuboid with a height of 60cm, width 60cm and length 80cm. The tub will be filled with water. How much water does it take to fill 2/3 of Irwan's bathtub?

1) Data Exposure of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume of Cuboid

a) Data of Problem-Solving

Table 4.8. Data of Problem-Solving of Converger Student in Problem of Volume of Cuboid

Data of Problem-Solving	Code
	CM4T1
	CM4T2
	CM4T3

b) Data of Observation

Table 4.9. Data of Observation of Converger Student in Problem of Volume of Cuboid

Student Activities	Code
(1) Student reading the whole sentence of problem.	CM4K1

(2)	Student start working on the problem, first write down what is known then what is asked.	CM4K2
(3)	Student seek solutions by using formula $\frac{2}{3}$ $(2 \times (p \times l) + (p \times t) + (l \times t)$, which is the surface area of the cuboid.	CM4K3
(4)	Student doing calculation.	CM4K4
(5)	Student write the final answer "So, a lot of water is needed to fill 2/3 bathtub is 14.400 cm^3"	CM4K5
(6)	The student pauses, feels something is wrong, then rereads the final answer.	CM4K6
(7)	Student re-read the whole sentence about problem four.	CM4K7
(8)	Student crossed out the answers he had got	CM4K8
(9)	Students solve the problem by using the formula " $volume = p \times l \times t$"	CM4K9
(10)	Students calculate "80 multiplied by 60 equals 4,800, then 4800 multiplied by 60 equals 288,000"	CM4K10
(11)	Student then multiply 2/3 by 288,000, and the result is 192,000 "	CM4K11
(12)	Student write the final answer "So, much water needed Irwan to fill 2/3 bathtub is 192.000 cm^3"	CM4K12

c) Data of Interview

PM4W1 : Lanjut mki di nomor 4, nah ini nomor 4 banyak coretannya. Di nomor 4 satu kali baca jki soalnya ?

CM4W1 : Soalnya satu kali baca, tapi jawabannya tidak

PM4W1 : Saat kita ulang jawabnya, kita baca ulang soalnya ?

CM4W1 : Iya

PM4W1 : Terus, bagaimanaki bisa langsung ubahki jawabanta ?

CM4W1 : Kuamati ulang lagi soalnya, karena ada kurasa aneh

PM4W1 : Yang bagian manaki rasa aneh jawaban pertamata ?

CM4W1 : Hasilnya

PM4W2 : Terrus, kenapaki bisa lagi dapat lagi penyelesaian seperti ini ?

CM4W2 : Karena harus lagi di amati kembali soalnya , di tahumi yang di cari itu volumenya bukan luas permukanaanya

PM4W3 :Jadi kita cari dulu volumenya, terus kalau sudah dapat volumenya baru di apakan ?

CM4W3 : Baru di di kali 2/3, karena di soal yang ditanya air yang dibutuhkan untuk mengisi 2/3 bak mandi

PM4W3 : Jadi hasilnya berapa ?

CM4W3 : 192.000 cm^3

PM4W8 : Kenapa kubik ? kenapa tidak sama seperti sebelunya ? kenapa bukan pangkat 2 ? kenapa disini pangkat 3

CM4W3 : Karena volume, jadi pangkat 3. Kalau luas permukaan pangkat 2, beda sama volume.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of converger student in volume of cuboid problem.

- Re-read the problem, based on data of CM4K6, CM4K7, and CM4W1.
- Write down the information that is known and asked, based on data of CM4T1, and CM4K2.

- Using the context of problems in the process as well as calculations,based data of CM4T2, CM4T3, CM4K9, CM4K10, CM4K11, and CW3M4.
- Write down the final answer to the solution, based on data of CM4T3, and CM4K12.
- There is an explanation in mathematical steps that fit the context but do not give reasons, based on data of CM4T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Converger Student in Problem of Volume of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of converger student in volume of cuboid problem is Meaning Based Approach in sub category MBA – Full Context.

2. Data Analysis of Mathematics Problem-Solving Behavior of Diverger Student

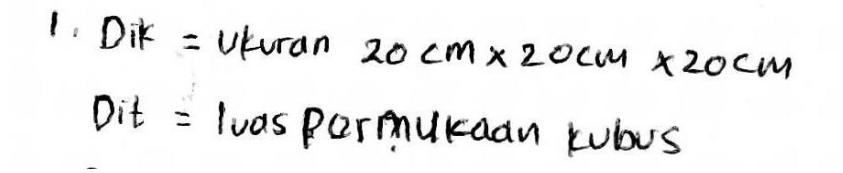
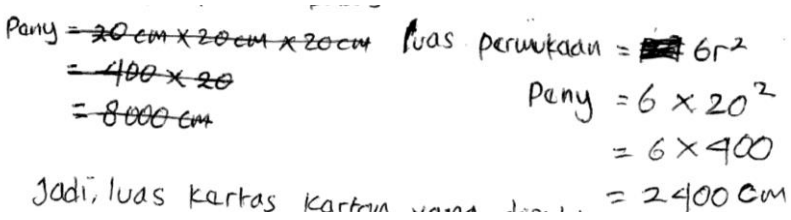
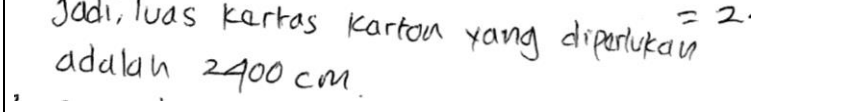
a. Problem of Surface area of Cube

Mrs. Hasan mades a cube cake with size 20cm x 20cm x 20cm. If she will put the cake into cardboard made of paperboard. What is the minimum paperboard area needed by Mrs. Hasan?

1) Data Exposure of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cube

a) Data of Problem-Solving

Table 4.10. Data of Problem-Solving of Diverger Student in Problem of Surface area of Cube

Data of Problem-Solving	Code
	DM1T1
	DM1T2
	DM1T3

b) *Data of Observation*

Table 4.11. Data of Observation of Diverger Student in Problem of Surface area of Cube

Student Activities	Code
(1) Reading the whole sentence of problem.	DM1K1
(2) Directly working on the problem, writing is known to be just rewriting as it is in the problem.	DM1K2
(3) Student use the formula directly, without understanding the formula.	DM1K3
(4) Student perform calculations "6 multiplied by 202, 202 equals 400, so 6 times 400 equals 2400 cm"	DM1K4
(5) Write the final answer "So, the required carton area is 2400cm"	DM1K5

c) Data of Interview

PM1W1 : Langsung mi nah ke soal nomor satu, kita baca sekali saja soalnya nomor satu atau kita baca berulang kali?

DM1W1 : sekali ji.

PM1W2 : Apa yang diketahui dari soalnya?

DM1W2 : ukurannya 20 kali 20 kali 20cm.

PM1W2 : Apa yang mau dicari jawabannya?

DM1W2 : Luas permukaan kubus kak.

PM1W3 : Gimana caranya dek?

DM1W3 : Pakai rumus $6r^2$.

PM1W3 : Kenapa $6r^2$?

DM1W3 : Karena begitu memang kak rumus untuk luas permukaan kubus.

PM1W4 : Ini ada coretan disamping, apa ini dek?

DM1W4 : Oh itu kak, salah pakai kak, terakhir pi ku ingat kalau rumus volume kubus itu.

PM1W5 : Jadi berapa jawabannya?

DM1W5 : 2400 cm kak.

PM1W5 : cm satuannya?

DM1W5 : Iye kak

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of Diverger student in surface area of cube problem.

- Solve the problem directly, and not read back before doing the calculations, based on data of DM1K2, DM1K4, and DM1W2.
- Not transform any information presented into a mathematical sentence, based on data of DM1T1, DM1K3, and DM1W2.
- Student do not use the context of the problem on completion or calculation, based on data of DM1T2, DM1W3, and DM1W5.
- Student do not give an explanation on the mathematical calculations, based on data of DM1T2.
- Write down the final answer of its context-appropriate completion, based on data of DM1T3.

3) Data interpretation of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cube

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of Diverger Student in Surface area of cube problem is Direct Transalation Approach in sub category DTA- proficient.

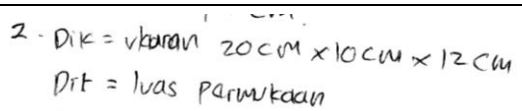
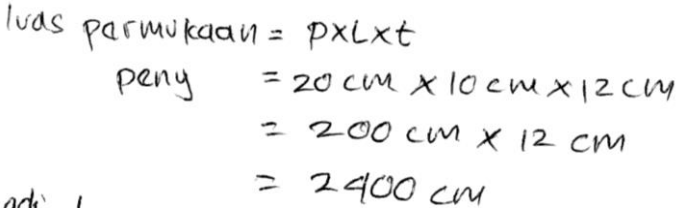
b. Problem of Surface area of Cuboid

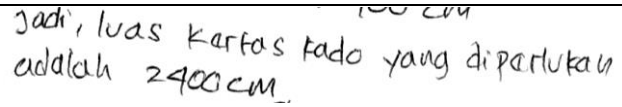
Novi will wrap her gift with wrapping paper. Novi's Gift shaped cuboid with measuring 20cm x 10cm x 12cm. Determine the minimum wrapping paper area needed to wrap the gift!

1) Data Exposure of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cuboid

a) Data of Problem-Solving

Table 4.12. Data of Problem-Solving of Diverger Student in Problem of Surface area of Cuboid

Data of Problem-Solving	Code
	DM2T1
	DM2T2

	DM2T3

b) Data of Observation

Table 4.13. Data of Observation of Diverger Student in Problem of Surface area of Cuboid

Student Activities	Code
(1) Student reading the whole sentence of problem.	DM2K1
(2) The student writes that the knowledge is merely rewriting as in the question.	DM2K2
(3) Re-reading the whole sentence, the students looked confused.	DM2K3
(4) Students start to work by using the beam volume formula, although he wants to find the surface area of the cuboid.	DM2K4
(5) Student counts 20cm times 10 cm times 12 cm, 20 times 10 equals 200, 200 multiples 12 equals 2400.	DM2K5
(6) Students write the final answer "So the required wrapping paper area is 2400cm.	DM2K6

c) Data of Interview

PM2W1 : Lanjut ke nomor dua, nomor dua dibaca sekali atau berulang-ulang?

DM2W1 : Kuulang kak.

PM2W2 : Informasi apa yang didapat dari soal nomor dua?

DM2W2 : Ukuran 20 x 10 x 12 cm..

PM2W2 : Apa yang ditanyakan?

DM2W2 : Luas kertas kado.

PM2W2 : Luas kertas kadonya itu sama dengan luas bentuk bangun ruang apa?

DM2W2 : Maksudnya kak?

PM2W2 : Luas permukaan kubus atau luas permukaan balok?

DM2W2 : ohh.. balok kak.

PM2W3 : Jadi gimana cara hitungnya?

DM2W3 : Tinggal dikalikan semua itu kak.

PM2W3 : Semua? Semua yang mana?

DM2W3 : 20 kali 10 kali 12 kak.

PM2W3 : Begitu dek?

DM2W3 : Iye kak

PM2W4 : Terus dapat berapa?

DM2W4 : 2400 cm.

PM2W4 : 2400 cm itu apa?

DM2W4 : luas kertas kado yang diperlukan kak.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of Diverger student in surface area of cuboid problem.

- Rereading the question but only behavior, based on data of DM2K3 and DM2W1.
- Less competent and difficulty in understanding problems, determining solutions, and performing mathematical calculations, based on data of DM2T1, DM2T2, DM2K4, and DM2W2.
- There is no explanation on the use of the formula, based on data of DM2T2.

- The calculation done by the student is meaningless because it has nothing to do with the problem (just continue what he did before), based on the data f DM2T2, DM2W3, and DM2W4.

3) Data interpretation of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Surface area of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of diverger student in surface area of cuboid Problem is Direct Transalation Approach in sub category DTA- not proficient.

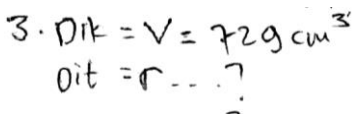
c. Problem of Volume of Cube

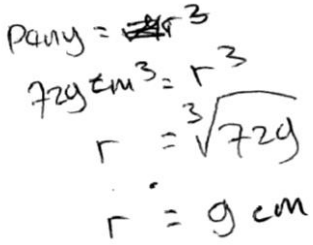
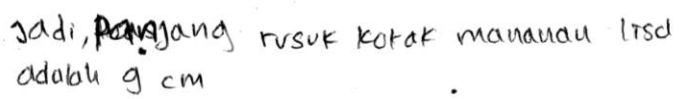
Lisa has a box of cube. Lisa wants to fill the box until it's full of 729cm^3 rice. Determine edge length of the lisa's food box!

1) Data Exposure of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cube

a) Data of Problem-Solving

Table 4.14. Data of Problem-Solving of Diverger Student in Problem of Volume of Cube

Data of Problem-Solving	Code
	DM3T1

	DM3T2
	DM3T3

b) Data of Observation

Table 4.15. Data of Observation of Diverger Student in Problem of Volume of Cube

Student Activities	Code
(1) Student reading the whole sentence of problem.	DM3K1
(2) Student says "Lisa wants to fill the box until full with 729cm3 rice" up to twice.	DM3K2
(3) Writes are known " V = 729cm^3", that asked "r...?"	DM3K3
(4) Student begin to work without writing the formula, immediately write down "729cm^3 = r^3"	DM3K4
(5) Student writes down "r = $\sqrt[3]{729}$"	DM3K5
(6) Students calculate the number of what the third rank gets 729, and the student tries to multiply 9 times 9 equals 81, equals 81 multiplied by 9 equals 729.	DM3K6
(7) Student write down "r = 9 cm"	DM3K7
(8) Student writes the final answer "So, the egde length of Lisa's food box is 9cm"	DM3K8

c) Data of Interview

PM3W1 : Ok, sekarang dinomor tiga, soalnya dibaca sekali atau berulang-ulang saat kita kerjakan ini nomor tiga?

DM3W1 : Tidak kuulangi baca kak.

PM3W2 : Dari soal informasi apa yang bisa kita dapat?

DM3W2 : Volumenya 729cm^3, baru disuruh ki cari panjang rusuk kotak makananannya lisa?

PM3W3 : Jadi bagaimana cara carinya?

DM3W3 : Pakai rumus volume kubus.

PM3W3 : Apa rumusnya?

DM3W3 : $V = r^3$.

PM3W4 : Kenapa bisa begitu rumusnya?

DM3W4 : Begitu memang ji kak dipelajari.

PM3W4 : Kenapa mesti r^3, bukan p atau l, atau bahkan t? Apa alasannya r?

DM3W4 : Ndak ku tahu mi itu kak, karena begitu ji na kasi ka guru ku.

PM3W4 : Kita tahu ji r itu apa?

DM3W4 : Rusuk kak.

PM3W5 : Jadi berapa rusuknya?

DM3W5 : 9 cm

PM3W5 : Darimana dapat 9?

DM3W5 : Hasil dari akar pangkat tiganya itu 729, baru ku coba coba mi angka berapa pangkat tiga dapat itu, ku dapat mi 9.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of diverger student in volume of cube problem.

- Not reread the questions, based on the data of DM3W1.
- Write down information that is known and asked, based on data of DM3T1, and DM3K3.
- Using context information problems in calculations but limited, based on data of DM3T2, and DM3W4.
- Write down the final answer of the solution, based on the data of DM3T3 and DM3K8.
- A little explanation in the mathematical step (limited explanation), based on data of DM3K4.

3) Data interpretation of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cube

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of diverger student in volume of cube problem is Direct Transalation Approach in sub category DTA-Limited Context.

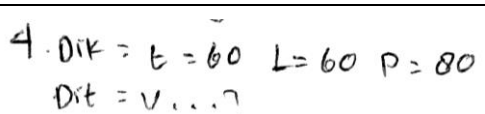
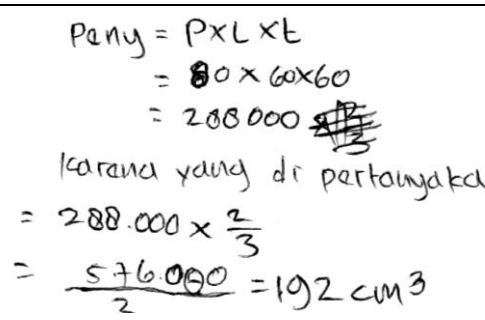
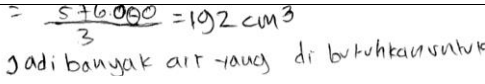
d. Problem of Volume of Cuboid

Irwan has a bathtub shaped cuboid with a height of 60cm, width 60cm and length 80cm. The tub will be filled with water. How much water does it take to fill 2/3 of Irwan's bathtub?

1) Data Exposure of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cuboid

a) Data of Problem-Solving

Table 4.16. Data of Problem-Solving of Diverger Student in Problem of Volume of Cuboid

Data of Problem-Solving	Code
	DM4T1
	DM4T2
	DM4T3

b) Data of Observation

Table 4.17. Data of Observation of Diverger Student in Problem of Volume of Cuboid

Student Activities	Kode
(1) Student reading the whole sentence of problem.	DM4K1

(2)	Write down what is known while reading the first sentence.	DM4K2
(3)	Student writes the way of completion by reading back the last sentence about.	DM4K3
(4)	Students after getting the result for the tub volume when full, students continue multiplying by 2/3.	DM4K3
(5)	Students "288,000 times 2 equals 576,000"	DM4K4
(6)	Then the students are less careful in calculating "576.000 divided by 3 = 192"	DM4K5
(7)	Students write the final answer "So much water required to two / 3 part partition is 192 cm3".	DM4K6

c) Data of Interview

PM4W1 : Pindah mi pale ke nomor empat, nomor empat dibaca sekali atau berulang kali?

DM4W1 : Berulang kak

PM4W2 : Apa yang di tahu dari soal nomor empat?

DM4W2 : Tinggi 60, lebar 60, panjang 80.

PM4W2 : Ada lagi?

DM4W2 : Berbentuk balok kak.

PM4W2 : Apa yang ditanyakan?

DM4W2 : Volume balok kak, eh volume 2/3nya bak kak.

PM4W3 : Jadi gimana cara carinya?

DM4W3 : Yah dicariki dulu volume baknya baru di kalikan 2/3 kak.

PM4W3 : Dapatnya berapa?

DM4W3 : 192 cm^3.

PM4W3 : Kenapa bisa 192 cm^3?

DM4W3 : Karena 576.000 dibagi 3 kak.

PM4W4 : Memangnya 576.000 dibagi 3 hasilnya 192 dek?

DM4W4 : Hmmm.. eh 192.000 kak. Kuluapai tiga nolnya.

PM4W5 : Oh iya dek. Satuannya?

DM4W5 : cm^3.

PM4W5 : Kenapa cm^3?

DM4W5 : Karena setahu ku kalau volume memang begitu satuannya kak cm^3.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of diverger student in volume of cuboid problem.

- Re-read the problem, based on data of DM4W1 and DM4K2.
- Write down the information that is known and asked, based on data of DM4T1.
- Using the context of problems in the process as well as calculations, based on data of DM4T2 and DM4K3.
- The final calculation he got was not quite right, although the steps were correct, based on data of DM4T2
- Write down the final answer of the settlement, based on data of DM4T3 and DM4K6.
- There are explanations in mathematical steps that are context-sensitive, but limited, based on data of DM4T2 and DM4W4.

3) Data interpretation of Mathematics Problem-Solving Behavior of Diverger Student in Problem of Volume of Cuboid

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of Diverger Student in volume of cuboid problem is Direct Transalation Approach in sub category DTA-Limited Context.

3. Data Analysis of Mathematics Problem-Solving Behavior of Accomodator Student

a. Problem of Surface area of Cube

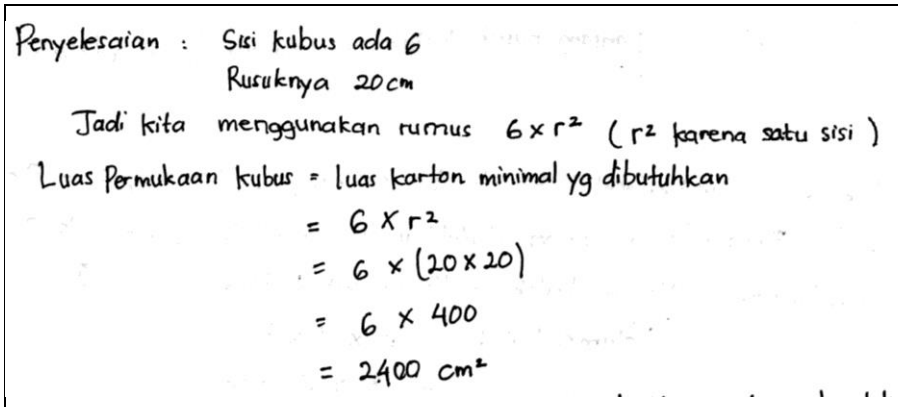
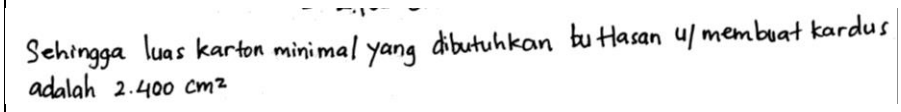
Mrs. Hasan mades a cube cake with size 20cm x 20cm x 20cm. If she will put the cake into cardboard made of paperboard. What is the minimum paperboard area needed by Mrs. Hasan?

1) Data Exposure of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cube

a) Data of Problem-Solving

Table 4.18. Data of Problem-Solving of Accomodator Student in Problem of Surface area of Cube

Data of Problem-Solving	Code
1. Dik : Kue berbentuk kubus ukurannya 20cm x 20cm x 20cm Dit : Luas karton minimal yg diperlukan	AM1T1

	AM1T2
	AM1T3

b) *Data of Observation*

Table 4.19. Data of Observation of Accomodator Student in Problem of Surface area of Cube

Student Activities	Code
(1) Students read the problem from the first sentence to the last sentence.	AM1K1
(2) Student writes what is known "Cake with cube-shaped and its size 20cm x 20 cm x 20cm"	AM1K2
(3) Students read the second and third sentences on the question.	AM1K3
(4) Student writes down what is asked "Minimum carton area required"	AM1K4
(5) Student uses the formula "6 x r2" to complete number one. The formula is not only because the students memorized but also she's understood, as evidenced by the students giving an explanation "The side of the cube there is 6" and "r^2 because one side".	AM1K5
(6) Students perform calculations by first searching the area of one side / r^2 "20 multiplied by 20 equal to 400" then "6 multiplied 400 equals 2400cm^2"	AM1K6
(7) (7) The student writes the final answer "So the minimum carton area required by bu Hasan to make a cardboard is 2,400 cm^2".	AM1K7

c) Data of Interview

PM1W1 : Langsung meki ke nomor satu nah. Di nomor satu setelah kita baca soalnya, Info apa yang ada di soalnya?

AM1W1 : Rusuk kubusnya kak 20cm.

PM1W1 : Apa yang mau dicari di soalnya?

AM1W1 : Luas permukaan kubus kak atau luas karton minimal yang diperlukan untuk buat kardus.

PM1W2 : Kenapa pakai rumus 6 x r^2?

AM1W2 : Karena itu mi kak rumusnya untuk cari luas permukaan kubus kak.

PM1W2 : Kita tahu kenapa bisa 6 x r^2 rumusnya?

AM1W2 : Ohh.. anu kak. Karena ada 6 sisinya kubus kak toh terus itumi r^2 untuk bisa dapat luas satu sisi. Jadi mi kak rumusnya $6r^2$.

PM1W3 : Terus waktunya kita kerjakan ini soal nomor satu sekali ji kita baca atau kita ulang-ulang atau bagaimana?

AM1W3 : Kubaca sekali dulu kak untuk mau ku tahu apa maksud soalnya, baru pas ku kerjakan, melihat ja lagi ke soalnya tp yang penting pentingnya ji untuk ku tulis.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of accomodator student in surface area of cube problem.

- Reading the problem repeatedly, based on data of AM1W3, AM1K1, and AM1K3.
- Write down information that is known and asked, based on data of AM1T1.
- Using the context of the problems in the process and calculations, based on data of AM1T2, and AM1W3.
- Write down the final answer of the settlement, based on data of AM1T3.
- There is an explanation in the mathematical step that fits the context of the problem and gives a reason, based on data of AM1T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cube

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of accomodator Student in Surface area of cube problem is Meaning Based Approach in sub category MBA- justification.

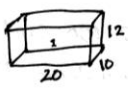
b. Problem of Surface area of Cuboid

Novi will wrap her gift with wrapping paper. Novi's Gift shaped cuboid with measuring 20cm x 10cm x 12cm. Determine the minimum wrapping paper area needed to wrap the gift!

1) Data Exposure of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cuboid

a) Data of Problem-Solving

Table 4.20. Data of Problem-Solving of Accomodator Student in Problem of Surface area of Cuboid

Data of Problem-Solving	Code
Dik : kado Novi ukurannya 20 x 10 x 12 cm, Jadi. p = 20cm, L = 10cm, t = 12cm Dit : Kertas kado yg diperlukan (Minimal) u/ membungkus kado Novi	AM2T1
Penyelesaian :  Kertas kado = Luas Permukaan = 2(20x12) + 2(10x12) + 2(20x10) Sisi depan dn Blakang / Sisi Samping / Sisi atas dn bawah = 2(240) + 2(120) + 2(200) = 480 + 240 + 400 = 1120 cm² 48 24 40 + 112 Sehingga luas kertas kado yg diperlukan u/ membungkus kado novi adalah 1120 cm².	AM2T2
= 1120 cm- Sehingga luas kertas kado yg diperlukan u/ membungkus kado novi adalah 1120 cm².	AM2T3

b) Data of Observation

Table 4.21. Data of Observation of Accomodator Student in Problem of Surface area of Cuboid

Student Activities	Code
(1) Student reads the whole sentence of problem.	AM2K1

(2) 2) Students read the second sentence, then write down what is known "Novi gift is 20 x 10 x 12 cm, so p = 20cm, l = 10cm, t = 12 cm"	AM2K2
(3) Students re-read the problem in the third sentence, then write down what was asked "Gift paper needed to wrap the gift Novi".	AM2K3
(4) Student solves the problem by drawing a cuboid and given information according to what is in problem.	AM2K4
(5) Student seems to forget the cuboid surface formula.	AM2K5
(6) Student re-reads the whole sentence of problem	AM2K6
(7) Student shall be given "Gift paper = surface area"	AM2K7
(8) Student then calculates the surface area by summing all sides of the beam.	AM2K8
(9) Student "The front and back are the same, the sides of the two sides are same, the top and bottom are the same"	AM2K9
(10) The student then sums it up in a simpler way, the student writes "2 (20 × 12) + 2 (10 × 12) +2 (20 x 10)", then gives an explanation on the calculation, and worked to get the end result of 1120cm^2.	AM2K10
(11) Student writes the final answer "So the amount of wrapping paper needed to wrap the Novi's gift is 1120cm^2".	AM2K11

c) Data of Interview

PM2W1 : Lanjut di nomor dua, nomor dua kita baca sekali atau berulang-ulang?

AM2W1 : Sama ji kak kayak nomor satu, baca sekali dulu semua soal nomor dua, baru ku baca lagi di kalimat pentingnya yang itu ada angkanya kak.

PM2W2 : Apa kita yang ketahui dari soalnya?

AM2W2 : Bentuk balok itu kadonya novi, panjangnya 20 cm, luasnya 20cm, baru tingginya 12 cm.

PM2W2 : Baru apa yang mau dicari?

AM2W2 : eee.. luas permukaan balok.

PM2W3 : Terus bagaimana cara cari jawabannya? Yang mana disini rumus luas permukaan balok?

AM2W3 : Sebenarnya kulupai ki kak apa rumusnya, itu mi ndak ada kutulis. Tapi ku gambar ki dulu bentuk balok baru bisa ma cariki luasnya, kan kalau mau ki cari ki luas permukaannya itu balok sama ji kalau dijumlahkan semua sisinya balok. Eeee.. na dibalok ada sisi yang sama luasnya, ku dapat mi itu kak kayak yang ini ku tulis.

PM2W3 : Setelah kita kerjakan kayak gini (nunujuk pekerjaan siswa) bisa mki tau rumusnya apa kira kira?

AM2W3 : Heheh iye kak

PM2W3 : Apa coba dek?

AM2W3 : Dua kali panjang kali tinggi ditambah dua kali lebar kali panjang ditambah dua kali panjang kali lebar.

PM2W3 : Jadi berapa luas permukaan baloknya berapa?

AM2W3 : 1120 cm^2 kak

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of accomodator student in surface area of cuboid problem.

- Reading the problem repeatedly, based on data of AM2W1 and AM2K3.
- Write down information that is known and asked, based on data of AM2T1.

- Using the context of the problems in the process and calculations, based on data of AM2T2, AM2K4, and AM2W3.
- Write down the final answer of the settlement, based on data of AM2T3.
- There is an explanation in the mathematical step that fits the context of the problem and gives a reason, based on data of AM2T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Surface area of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of accomodator student in surface area of cuboid problem is Meaning Based Approach in sub category MBA- justification.

c. Problem of Volume of Cube

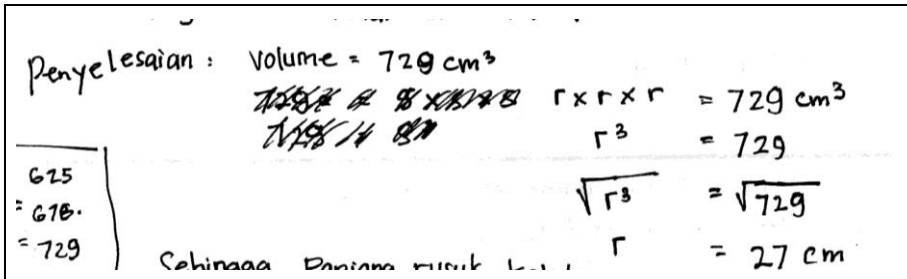
Lisa has a box of cube. Lisa wants to fill the box until it's full of 729cm^3 rice. Determine edge length of the lisa's food box!

1) Data Exposure of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cube

a) Data of Problem-Solving

Table 4.22. Data of Problem-Solving of Accomodator Student in Problem of Volume of Cube

Data of Problem-Solving	Code
Dik :- Kotak makanan terisi hingga penuh dengan 729 cm^3 Nasi (Volume-kotak makanan) - Kotaknya berbentuk kubus Dit : Panjak rusuk kotak makanan Lisa	AM3T1

	AM3T2
Sehingga Panjang rusuk kotak makanan Lisa adalah 27 cm	AM3T3

b) Data of Observation

Table 4.23. Data of Observation of Accomodator Student in Problem of Volume of Cube

Student Activities	Code
(1) Student reads the whole sentence of problem.	AM3K1
(2) Student re-reads the second sentence then write down what is known "The food box is fully loaded with 729cm^3 rice (the volume of the food box)".	AM3K2
(3) The student re-reads the third sentence, then writes down what is asked "Lisa's edge length of food box"	AM3K3
(4) Student doing calculations, first of all by taking the volume equal to 729cm^3, then r x r x = 729, r^3 = 729, $\sqrt{r^3} = \sqrt{729}$, r = 27 cm.	AM3K4
(5) Student writes the final answer "So that the edge length of Lisa's food box is 27 cm.	AM3K5

c) Data of Interview

PM3W1 : Sekarang nomor tiga nah, kita baca berulang kali soalnya atau cuman sekali baca?

AM3W1 : Ku ulangi kak.

PM3W2 : Apa yang kita tahu dari soalnya?

AM3W2 : Volumenya kak,729cm^3. Eeeh volume kubus.

PM3W2 : Apa yang mau dicari?

AM3W2 : Rusuknya itu kubus.

PM3W3 : Jadi gimana cara cari jawabannya?

AM3W3 : Pakai itu ji kak rumus volume kubus yang r pangkat tiga. Tapi bedanya ini rusuknya yang mau di cari bukanmi volumenya.

PM3W3 : Terus kita dapat berapa hasilnya?

AM3W3 : Rusuknya 27cm kak.

PM3W4 : Kenapa bisa?

AM3W4 : Akar pangkat tiga dari 729.

PM3W4 : Nah akar pangkat tiga dari 729 ?

AM3W4 : 27 kak. (diam sejenak, perhatikan pekerjaannya) Ih astagafirullah salah ka kak, akar pangkat dua yang ku kerjakan. Ndak fokus ka heheh. (Menghitung akar pangkat tiga dari 729) Deh 9 kak, 9 cm jawabannya kak.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of accomodator student in volume of cube problem.

- Reading the problem repeatedly, based on data of AM3W1 and AM3K2.
- Write down information that is known and asked, based on data of AM3T1.
- Using the context of problems in the process as well as calculations, based on data of AM3T2 and AM3K4.
- Write down the final answer of the settlement, based on data of AM3T3 and AM3K5.
- There is an explanation in mathematical steps that fit the context but do not give a reason, based on data of AM3T2 and AM3K4.

3) Data interpretation of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cube

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of accomodator student in volume of cube problem is Meaning Based Approach in sub category MBA- full context.

d. Problem of Volume of Cuboid

Irwan has a bathtub shaped cuboid with a height of 60cm, width 60cm and length 80cm. The tub will be filled with water. How much water does it take to fill 2/3 of Irwan's bathtub?

1) Data Exposure of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cuboid

a) Data of Problem-Solving

Table 4.24. Data of Problem-Solving of Accomodator Student in Problem of Volume of Cuboid

Data of Problem-Solving	Code
Dik : - Bak berbentuk balok t = 60 cm, L = 60 cm, P = 80cm. Dit : Berapa banyak air yg dibutuhkan u/ mengisi 2/3 bagian bak ?	AM4T1
Penyelesaian : Volume balok = Volume bak ketika terisi full. Volume balok = p x l x t = 80 x 60 x 60 = 80 x 3600 = 288.000 cm3 Karena yg ditanyakan 2/3 bagian bak, maka selanjutnya. Volume 2/3 bak = $\frac{2}{3}$ x 288.000 = $\frac{576.000}{3}$ = 192.000 cm3	AM4T2
Sehingga banyaknya air yang dibutuhkan u/ mengisi 2/3 bagian bak adalah 192.000 cm3 / 192.000 kubik.	AM4T3

b) Data of Observation

Table 4.25. Data of Observation of Accomodator Student in Problem of Volume of Cuboid

Student Activities	Code
(1) Student reads the whole sentence of problem.	AM4K1
(2) Students re-read the first sentence, then write what is known "Tub-shaped t = 60cm, l = 60cm, p = 80cm".	AM4K2
(3) Students then read the last sentence on the problem and write down what is asked "How much water does it take to fill 2/3 of Irwan's bathtub?"	AM4K3
(4) Student begin solving the problem by separating the cuboid volume = the volume of the bathtub when fully filled.	AM4K4
(5) Student using formula " $volume = p \times l \times t$"	AM4K5
(6) Students perform calculations "60 times 60 equals 3,600, then 80 multiplied by 3,600 equals 288,000"	AM4K6
(7) The student then multiplies 2/3 with the result he got earlier (288,000) by giving the reason because the asked 2/3 part of the bathtub.	AM4K7
(8) Students calculate "2/3 times 288.00, 2 times 288,000 equals 576,000, 576,000 divided by 3 equals 192,000"	AM4K8
(9) Students write the final answer "So that the amount of water needed to fill 2/3 tubs is 192.000 cm^3 / 192.000 cubic".	AM4K9

c) Data of Interview

PM4W1 : Terakhir soal nomor 4, dibaca ulang atau ndak?

AM4W1 : Diulang kak.

PM4W2 : Informasi apa yang ada di soal?

AM4W2 : Tinggi, lebar dan panjangnya balok.

PM4W3 : Berapa- berapa itu dek?

AM4W3 : Tingginya 60, lebarnya 60, dan panjangnya 80cm.

PM4W4 : Apa yang mau dicari?

AM4W4 : 2/3 volume balok atau baknya.

PM4W5 : Jadi gimana cara selesaikannya?

AM4W5 : Pertama di cari dulu volume aslinya, maksduku kak volume kalau full air itu baknya, nah kalau sudahmi kudapat itu, baru dikalikan dua baru bagi tiga untuk dapat 2/3 volume baknya.

PM4W6 : Jadi berapa jawabannya?

AM4W6 : 192.000 cm^3.

PM4W7 : Kenapa cm^3 bukan cm^2? karena volume kak, untuk mau dapat volumekan tiga kali perkalian ki, jadi itu mi pangkat tigaki, kalau cm^2 untuk yang luas ji kak.

AM4W7 : Karena volume kak, untuk mau dapat volume kan tiga kali perkalian ki, jadi itu mi pangkat tigaki, kalau cm^2 untuk yang luas ji kak.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of accomodator student in volume of cuboid problem.

- Read the problem repeatedly, based on data of AM4K2, AM4K3, and AM4W1.
- Write down information that is known and asked, based on data of AM4T1, AM4K2, and AM4K3.
- Using the context of the problems in the process as well as the calculations, based on data of AM4T2, AM4K4, AM4K5, AM4K7, and AM4W3.
- Write down the final answer of the settlement, based on data of AM4T3, and AM4K9.

- There is an explanation in the mathematical step that fits the context of the problem and gives a reason, based on data of AM4T2 and AM4K4.

3) Data interpretation of Mathematics Problem-Solving Behavior of Accomodator Student in Problem of Volume of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of accomodator student in volume of cuboid problem is Meaning Based Approach in sub category MBA- justification.

4. Data Analysis of Mathematics Problem-Solving Behavior of Assimilator Student

a. Problem of Surface area of Cube

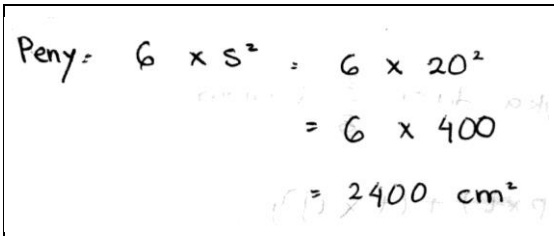
Mrs. Hasan mades a cube cake with size 20cm x 20cm x 20cm. If she will put the cake into cardboard made of paperboard. What is the minimum paperboard area needed by Mrs. Hasan?

1) Data Exposure of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cube

a) Data of Problem-Solving

Table 4.26. Data of Problem-Solving of Assimilator Student in Problem of Surface area of Cube

Data of Problem-Solving	Code
Dik : kubus dengan ukuran 20 cm x 20cm x 20cm Dit : L. kertas karton yang diperlukan untuk memasukkan kue	SM1T1

	SM1T2
	SM1T3

b) Data of Observation

Table 4.27. Data of Observation of Assimilator Student in Problem of Surface area of Cube

Student Activities	Code
(1) Student reads the whole sentence of problem.	SM1K1
(2) Student writes the information in the problem without reading again about the "cube with size 20 cm x 20 cm x 20 cm"	SM1K2
(3) Student then writes down what is asked "the breadth of cardboard needed to enter the cake"	SM1K3
(4) Students write the formula "6 X s^2", write the formula just to write without understanding.	SM1K4
(5) Student without re-reading the problem directly do the calculation "6 multiplied by 20 power 2, 202 equal to 400, so 6 times 400 equal to 2400"	SM1K5
(6) Student writes the final answer "So, carton area is 2400cm^2".	SM1K6

c) Data of Interview

PM1W1 : Ok, dek. Langsung saja nah, ini nomor 1 waktu dikerjakan soalnya kita baca ulang – ulang soalnya atau tidak ?

SM1W1 : Tidak

PM1W1 : Satu kali baca langsungki kerja soalnya ?

SM1W1 : Iya

PM1W1 : Kita pahami langsung maksud soalnya ?

SM1W1 : Iya

PM1W2 : Terus apa yang di maksud disini 20 cm x 20 cm x 20 cm ?

SM1W2 : Itu ukuran kuenya

PM1W2 : Kalau 20cm saja itu apa dek?

SM1W2 : Hmm.. ndak tau mi kak

PM1W2 : Terus, jadi yang 2400 cm^2 ini apa ?

SM1W2 : Luas kertas karton.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of assimilator student in problem of surface area of cube.

- Solve the problem directly, based on data of SM1W1 and SM1K2.
- Not transform any information presented into a mathematical sentence, based on data of SM1T1 and SM1W2.
- Students do not use problem context on completion or calculation, based on data of SM1T2 and SM1W2
- Students do not read back before doing the calculations, based on data of SM1K5.
- Students do not give an explanation on the mathematical calculation, based on data of SM1T2 and SM1K4.

- Write down the final answer of its context-appropriate solution, based on data of SM1T3.

3) Data interpretation of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cube

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of assimilator student in surface area of cube problem is Direct Transalation Approach in sub category *DTA- proficient.*

b. Problem of Surface area of Cuboid

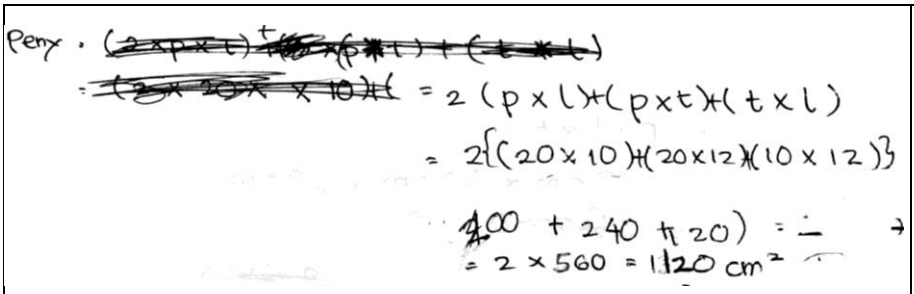
Novi will wrap her gift with wrapping paper. Novi's Gift shaped cuboid with measuring 20cm x 10cm x 12cm. Determine the minimum wrapping paper area needed to wrap the gift!

1) Data Exposure of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cuboid

a) Data of Problem-Solving

Table 4.28. Data of Problem-Solving of Assimilator Student in Problem of Surface area of Cuboid

Data of Problem-Solving	Code
Dik : kado berukuran 20 cm x 10 cm x 12 cm Dit : L. kertas kado	SM2T1

	SM2T2

b) Data of Observation

Table 4.29. Data of Observation of Assimilator Student in Problem of Surface area of Cuboid

Student Activities	Code
1) Student reads the whole sentence of problem.	SM2K1
2) Student reads back the second and third sentences, then record the information (write down what is known and asked).	SM2K2
3) Student writes the formula of the surface area of the cuboid (a formula that he already memorized), the writing of the formula is less precise.	SM2K3
4) Students reread the second sentence on the matter, then write "$2 \times (20 \times 10) + (20 \times 12) + (10 \times 12)$"	SM2K4
5) Student starts the calculation "20 multiplied by 10 equals 200, 20 multiplied by 12 equals 240, 10 multiplied by 12 equals 120"	SM2K5
6) Student "200 plus 240 plus 120 equals 560" then "2 times 560 equals 1120".	SM2K6

c) Data of Interview

PM2W1 : Nomor 2, nomor 2 kita baca ulang atau tidak ?

SM2W1 : Baca ulang

PM2W1 : Kenapa ada yang kurang kita pahami soalnya ? atau gimana ?

SM2W1 : Pertamanya tidak baca jelas

PM2W1 : Kedua untuk memperjelas, jadi kita baca ulang ?

SM2W1 : Iya

PM2W2 : Yang ini lagi dek, 20 cm x 10 cm x 12 cm ini apa ?

SM2W2 : Ukuran kado

PM2W2 : 20 mewakili apa ? 10 mewakili apa ? dan 12 mewakili apa ?

SM2W2 : 20 panjang , 10 tinggi, dan 12 cm lebar

PM2W3 : Ini dihasil akhir kenapa ada coret – coret ?

SM2W3 : Karena salah tulis

PM2W3 : Salah tulis ? salah tulis atau salah hitung terus kita ubah – ubah ?

SM2W3 : Dua – duanya

PM2W4 : Oh iye, terus kenapa pakai rumus begini ki dek? (nunjuk perkerjaan siswa)

SM2W4 : Yang diajarkan sama yang setahu ku begitu.

PM2W4 : Kita pahami ji kenapa bisa begini rumusnya?

SM2W4 : Ndak kak, begitu ji saja nakasih tahu guruku, jadi itu ji langsung ku hafal.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of assimilator student in surface area of cuboid problem.

- Re-reading the problem, based on data of SM2K1 and SM2W1.
- Write down information that is known and asked, based on data of SM2T1.
- Re-read the questions presented followed directly by the calculation, based on data of SM2K4.

- Using the context information of the problem in the calculation but limited, based on data of SM2T2, SM2W2 and SM2W4.
- A little explanation in the mathematical step (limited explanation) , based on data of SM2T2
- Not writing an explanation for the final result she got, based on data of SM2T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Surface area of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of assimilator student in surface area of cuboid problem is direct transalation approach in sub category DTA-Limited Context.

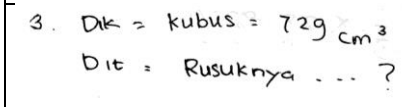
c. Problem of Volume of Cube

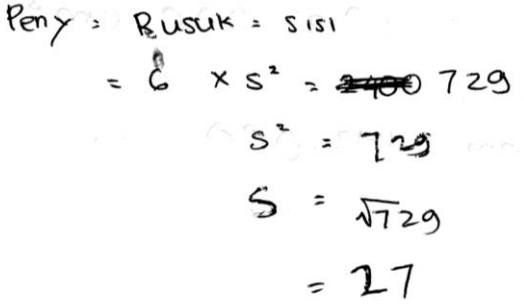
Lisa has a box of cube. Lisa wants to fill the box until it's full of 729cm^3 rice. Determine edge length of the lisa's food box!

1) Data Exposure of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cube

a) Data of Problem-Solving

Table 4.30. Data of Problem-Solving of Assimilator Student in Problem of Volume of Cube

Data of Problem-Solving	Code
	SM3T1

	SM3T2
	SM3T3

b) Data of Observation

Table 4.31. Data of Observation of Assimilator Student in Problem of Volume of Cube

Student Activities	Code
(1) Student reads the whole sentence of problem.	SM3K1
(2) Students reread the second sentence then write down what is known "Cube= 729 cm^3"	SM3K2
(3) Students reread the third sentence, then write down what is asked "Edge ...?"	SM3K3
(4) Student misrepresents it "Edge = Sides"	SM3K4
(5) Students write the wrong formula " 6 x s^2". Then hesitate to continue.	SM3K5
(6) Student writes the number 2400, but then crossed out, paused and then wrote 729.	SM3K6
(7) Student performing unclear calculations, just want to complete the calculation without understanding.	SM3K7
(8) Students write the final answer "so its edge is 27 cm".	SM3K8

c) Data of Interview

PM3W1 : Terus yang nomor 3, nomor 3 kita baca ulang atau tidak ?

SM3W1 : Baca ulang.

PM3W2 : Apa yang ditanyakan nomor 3 ?

SM3W2 : Berapa panjang rusuknya.

PM3W3 : Berapa panjang rusuknya ? terus ini 729 cm3 apa ?

SM3W3 : Iye. Volume kubus.

PM3W3 : Terus, ini kakak mau nanya 6 x s^2 itu apa ?

SM3W3 : Luas permukaan kubus .

PM3W3 : Yakin? Dari tadi katanya volumenya ditanya kenapa jadi luas permukaan ?

SM3W3 : Salah, salah itu

PM3W3 : Terus kenapa disini jadi s pangkat 2 ?

SM3W3 : Tidak tahu.

PM3W3 : Yang ini kenapa jadi akar 2 ? bukan akar 3 ?

SM3W3 : Karena akar 2 begini, jadi salah ka.

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cube

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of Assimilator student in volume of cube problem.

- Reread the problem but only the behavior, based on data of SM3K2 and SM3K2.
- Write down information that is known and asked, but less clear, based on data of SM3T1 and SM3K4.

- Less competent and difficulty in understanding problems, determining solutions, and performing mathematical calculations, based on data of SM3T2, SM3K5, and SM3W4.
- The calculation is not meaningful because it has nothing to do with the problem, based on data of SM3T2, SM3K7 and SM3W3.
- Write down the wrong answer, based on data of SM3T2.

3) Data interpretation of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cube

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of assimilator student in volume of cube problem is Direct Transalation Approach in sub category DTA- not proficient.

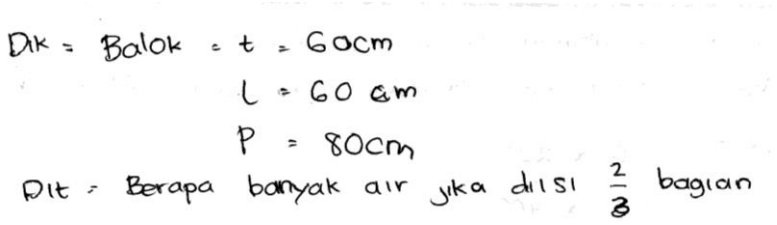
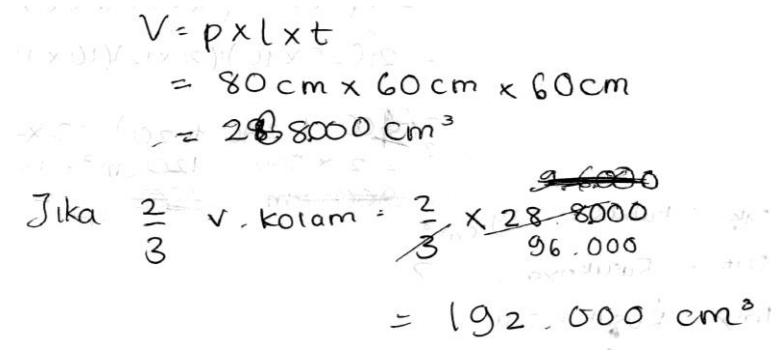
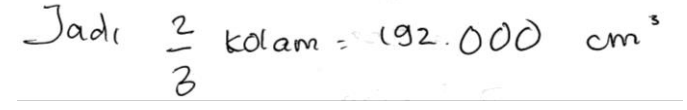
d. Problem of Volume of Cuboid

Based on the behavior characteristics detail that put forward, then mathematics problem-solving behavior of assimilator student in volume of cuboid problem is Direct Transalation Approach in sub category DTA-Limited Context.

1) Data Exposure of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cuboid

a) Data of Problem-Solving

Table 4.32. Data of Problem-Solving of Assimilator Student in Problem of Volume of Cuboid

Data of Problem-Solving	Code
	SM4T1
	SM4T2
	SM4T3

b) Data of Observation

Table 4.33. Data of Observation of Assimilator Student in Problem of Volume of Cuboid

Student Activities	Code
1) Student reads the whole sentence of problem.	SM4K1
2) Student start working on the problem, first write down what is known then what is asked.	SM4K2
3) Student looking for answer solution by using formula $\frac{2}{3}$ ($2 \times (p \times l) + (p \times t) + (l \times t)$, which is the surface area of the cuboid.	SM4K3
4) Student perform calculations.	SM4K4
5) Student has not arrived at the final answer, students feel hesitant then re-read the whole sentence of problem.	SM4K5
6) Student cross out previous work, and continue using other means (other formulas).	SM4K6
7) Student writes down $v = p \times l \times t$"	SM4K7
8) Student perform calculations "80 times 60 times 60 equals 288,000"	SM4K8
9) Student then multiply 2/3 by 288,000, and the result is 192,000 "	SM4K9
10) Student writes the final answer "So 2/3 of the pool = 192,000 cm^3".	SM4K10

c) Data of Interview

PM4W1 : Iya tidak apa – apa, lanjut mki dinomor 4 . di nomor 4 bagaimana ? kita baca ulang atau tidak?

SM4W1 : Ulang kak.

PM4W2 : Apa yang ditnyakan di nomor 4 ?

SM4W2 : Volumenya bak yang terisi 2/3

PM4W3 : Bagaimana caranya kita cari jawabannya ?

SM4W3 : Cari volumenya dulu, baru kalau di dapat volumenya kali 2/3 supaya didapat bagian 2/3 nya

PM4W4 : Eh ini 80, 60 itu apa ?

SM4W4 : 60 itu lebar dan 80 tingginya

PM4W5 : Jadi apa rumusnya volume balok ?

SM4W5 : Panjang x lebar x tinggi

PM4W5 : Dan ini 192.000 cm3 ini apa dek ?

SM4W5 : Volume 2/3 kolam

2) Characteristic Analysis of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cuboid

Based on the explanation of problem-solving data, observation data, and interview data, here are the detail characteristics of mathematics problem-solving behavior of assimilator student in volume of cuboid problem.

- Re-read the problem, based on data of SM4K5 and SM3W1.
- Write down information that is known and asked, based on data of SM4T1.
- Using the context of problems in the process as well as calculations, based on data of SM4T2, SM3K7S, SM3K9, and M3W5.
- Write down the final answer of the settlement, based on data of SM4T3.
- There is an explanation in mathematical steps that fit the context but do not give a reason, based on data of SM4T2 and SM3W3.

3) Data interpretation of Mathematics Problem-Solving Behavior of Assimilator Student in Problem of Volume of Cuboid

Based on the behavior characteristics detail that put forward, then Mathematics Problem-Solving Behavior of assimilator Student in Problem four is Meaning Based Approach in sub category MBA- full context.

B. Discussions

Based on the results of data exposure and data analysis has been presented, the researcher identifies the dissemination of student problem-solving behavior by matching the behavior based on Pape's classification (2004). Here are the identification that has been stated.

1. Student Converger Learning Style Type

Based on the results of written tests, observation data, and interviews, student converger learning style type on surface area of cube problem and surface are of cuboid problem categories of problem-solving behavior is *Direct Translation Approach- limited context* (*DTA- limited context),* then on volume of cube and volume of cuboid problems category of behavior the solution is shown *Meaning Base Approach- full context (MBA- full context).* It shows the problem-solving behavior of mathematics converger student tend to two types of behavior that is in the category *DTA- limited context* for questions about the surface area of cube and cuboid, then on the question of the volume of cube and cuboid in categories *MBA-Full Context.*

Student converger learning style type the tendency of behavioral traits in solving the mathematics story problem on surface area of cube and cuboid subject are: 1) not rereading; 2) write down the infoormation that is known and asked, 3) using the context of the problem in the process of finding the method of completion, but limited; 4) write down the final answer of the settlement; 5) the explanation in the mathematical step is limited and gives no reason.

On mathematics story question of volume cube and cuboid subject, the tendency of behavioral traits to solve its are: 1) read over and over again; 2) write down the information that is known and asked; 3) using the context of the problems in the process as well as the calculations; 4) write down the final answer of the settlement; 5) there is an explanation in the mathematical step that fits the context of the problem write down the final answer to the solution but does not give a reason.

2. Student Diverger Learning Style Type

Based on the results of written tests, observation data, and interviews, student diverger learning style type on surfeace are of cuboid problem categories of problem-solving behavior is *Direct Translation Approach- Proficient (DTA-proficient).* On surface area of cuboid problem categories of problem-solving behavior that shown is *Direct Translation Approach- not proficient (DTA- not proficient).* Furthermore, at voule of cube and volume of cuboid problems the categoriy of of problem-solving behavior are *Direct Translation Approach-limited context (DTA- limited context)*. It shows the behavior of problem solving of diverger students tend to *Direct Translation Approach (DTA)* in sub category *DTA- limited context.*

Student diverger learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) not rereading; 2) write down the infoormation that is known and asked; 3) using the context of the problem in the process of finding the method of completion; 4) write down the

final answer to the solution; 5) the explanation in the mathematical step is limited and gives no reason.

3. Student *Accomodator* Learning Style Type

Based on the results of written tests, observation data, and interviews, student *accomodator* learning style type on surface area of cube, surface area of cuboid, and volume of cuboid problems category of problem-solving behavior is *Meaning Base Approach- justification* (*MBA- justification*). On volume of cube problem categories of problem-solving behavior that shown is *Meaning Base Approach- full context* (*MBA- full context*). Its show the behavior of problem solving of *accomodator* students tend to *Meaning Base Approach* in sub category *MBA- justification.*

Student accomodator learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) read over and over again; 2) write down the information that is known and asked; 3) using the context of the problems in the process as well as the calculations; 4) write down the final answer of the settlement; 5) there is an explanation in the mathematical step that fits the context of the problem write down the final answer to the solution but does not give a reason.

4. Student Assimilator Learning Style Type

Based on the results of written tests, observation data, and interviews, student *assimilator* learning style type on surface area of cube problem categories of problem-solving behavior is *Direct Translation Approach- proficient* (*DTA-*

proficient). On surface are of cuboid problem category of problem-solving behavior that shown is *Direct Translation Approach- limited contet* (*DTA- limited context*). On volume of cube problem category of problem-solving behavior that shown is *Direct Translation Approach- not proficient (DTA- not proficient*). On volume of cuboid problem category of problem-solving behavior that shown is *Meaning Base Approach- full context* (*MBA- full context*). It shows the behavior of problem solving of *assimilator* students tend to *Direct Translation Approach.*

Student *assimilator* learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) reread the question; 2) write down the information that is known and asked; 3) less competent and sometimes difficulty in understanding the problem; 4) there is no explanation on the metatical steps; 5) write down the final answer from a context-appropriate solution.

Here is the distribution of behaviors that students show for each problem.

Tabel 4.34. Distribution of Mathematics Problem-Solving Behavior that Shown by Students in Each Problems

Learning Style Type	Problem of Surface area of Cube	Problem of Surface area of Cube	Problem of Volume of Cube	Problem of Volume of Cuboid
Converger	*DTA- limited context*	*DTA- limited context*	*MBA- full context*	*MBA- full context*
Diverger	*DTA- proficient*	*DTA- not proficient*	*DTA- limited context*	*DTA- limited context*

Accomodator	*MBA- justification*	*MBA- justification*	*MBA- full context*	*MBA- justification*
Assimilator	*DTA- proficient*	*DTA- limited context*	*DTA- not proficient*	*MBA- full context*

CHAPTER V

CLOSING

A. Conclusions

Based on research results about problem-solving behaviour based on students' Pape classification with their learning style on grade VIII SMP Negeri 30 Makassar, its can be concluded as follows.

1. Problem solving behavior of mathematics converger student tend to two types of behavior that is in the category *Direct Translation Approach (DTA)* in sub category *DTA- limited context* for questions about the surface area of cube and cuboid, then on the questions of the volume of cube and cuboid in categories *Meaning-Based Approach (MBA)* in sub category *MBA-Full Context.* Student converger learning style type the tendency of behavioral traits in solving the mathematics story problem on surface area of cube and cuboid subject are: 1) not rereading; 2) write down the infoormation that is known and asked, 3) using the context of the problem in the process of finding the method of completion, but limited; 4) write down the final answer of the settlement; 5) the explanation in the mathematical step is limited and gives no reason.On mathematics story question of volume cube and cuboid subject, the tendency of behavioral traits to solve its are: 1) read over and over again; 2) write down the information that is known and asked; 3) using the context of the problems in the process as well as the calculations; 4) write

down the final answer of the settlement; 5) there is an explanation in the mathematical step that fits the context of the problem write down the final answer to the solution but does not give a reason.

2. Problem-solving behavior of diverger students tend to *Direct Translation Approach (DTA)* in sub category *DTA- limited context.* Student diverger learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) not rereading; 2) write down the infoormation that is known and asked; 3) using the context of the problem in the process of finding the method of completion; 4) write down the final answer to the solution; 5) the explanation in the mathematical step is limited and gives no reason.
3. Problem-solving behavior of *accomodator* students tend to *Meaning Base Approach* in sub category *MBA- justification.* Student accomodator learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) read over and over again; 2) write down the information that is known and asked; 3) using the context of the problems in the process as well as the calculations; 4) write down the final answer of the settlement; 5) there is an explanation in the mathematical step that fits the context of the problem write down the final answer to the solution but does not give a reason.

4. Problem-solving behavior of *assimilator* students tend to *Direct Translation Approach.* Student *assimilator* learning style the tendency of behavioral traits in solving the mathematical problem of cube and cuboid subject are: 1) reread the question; 2) write down the information that is known and asked; 3) less competent and sometimes difficulty in understanding the problem; 4) there is no explanation on the metatical steps; 5) write down the final answer from a context-appropriate solution.

B. Suggestions

Based on the conclusions of the above researchers, the researchers suggest the following matters..

1. To teachers of mathematics subjects
    a. Teachers are expected more often introduce mathematical sentences so that students are familiar with the mathematical sentence so that when faced with mathematical problems, students automatically can immediately feel the problem in question about the story and does not cause misinterpretation.
    b. Teachers are expected not to avoid the story-shaped questions in the lesson, because the problem in the form of stories is needed by students to hone the ability of understanding in solving problems.

c. Teachers are expected to be able to emphasize to students about the context of any problems that exist in the story problem for students to use in writing the initial information about the story.

2. For further research

a. The next researcher will research mathematics problem-solving behavior should provide various types of questions with the number of respondents are more so that expected to be able to find other problem-solving behaviors.

b. The next researcher can also design a learning that directs the behavior patterns of students to better interpret the problems and concepts of mathematics in everyday life.

c. Written questions are made more contextual in order to process the problem-solving behavior analysis, researchers are easier to categorize problem-solving behavior.

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APPENDIX A

Research Instruments

- INSTRUMENTS VALIDATION
- INSTRUMENTS LATTICEWORK
- INSTRUMENTS TEST

1

INSTRUMENTS VALIDATION

LEMBAR PENILAIAN ANGKET/KUESIONER

A. Pengantar

Saya adalah peneliti yang akan melaksanakan penelitian dalam rangka penyusunan*):

a. Skripsi (S1)
b. Tesis (S2)
c. Disertasi (S3)
d. Laporan Penelitian lainnya

Sebagai rangkaian kegiatan penelitian tersebut, saya mengembangkan instrumen yang berbentuk angket atau kuesioner tentang**):

Gaya Belajar Kolb

Saya meminta kesediaan Bapak/Ibu untuk memberikan penilaian isi dan konstruk LKS tersebut dan memutuskan kelayakannya untuk diterapkan dalam pembelajaran yang akan saya laksanakan. Penilaian RPP tersebut dilakukan dengan memberi tanda cek (√) pada kolom skala penilaian pada tabel penilaian di bawah ini. Skala penilaian yang diberikan adalah 1 (tidak valid), 2 (kurang valid), 3 (cukup valid) ,4 (valid), atau 5 (sangat valid) dengan berpedoman pada rubrik penilaian yang terlampir.Selain memberi penilaian, Bapak/Ibu diharapkan untuk memberi saran-saran atau komentar sesuai dengan aspek yang dinilai pada kolom keterangan.

Atas kesedian dan penilaian Bapak/Ibu saya mengucapkan terima kasih.

Keterangan:
*) Lingkarilah salah satu pilihan yang sesuai

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
1. Kisi-kisi Angket/Kuesioner				✓		
2. Relevansi Indikator dengan teori terbaru				✓		
3. Kesesuaian Indikator dengan tujuan pengumpulan data				✓		
4. Petunjuk Pengisian Instrumen				✓		
5. Proporsi Butir-butir Angket/Kuesioner terhadap Indikator				✓		
6. Kejelasan Pilihan Respon				✓		

B. KONSTRUK																
Indikator/Butir	Kesesuaian Butir - Indikator					Kejelasan Maksud pernyataan					Kaidah B. Indonesia					Keterangan
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Indikator 1: Perasaan/ Concrete Experiencee (CE)				✓					✓					✓		
1. Belajar dari penglaman konkret				✓					✓					✓		

2. Belajar berkelompok				✓				✓				✓		
3. Memiliki kepedulian terhadap orang lain				✓				✓				✓		
4. Terbuka terhadap orang lain				✓				✓				✓		
Indikator 2: Pengamatan/ *Reflective Observation* (RO)				✓				✓				✓		
1. Belajar dari pengamatan				✓				✓				✓		
2. Belajar dengan berbagai cara				✓				✓				✓		
3. Menyimak makna dari hal yang diamati				✓				✓				✓		
4. Teliti dalam belajar				✓				✓				✓		
5. Teliti dalam ulangan				✓				✓				✓		
Indikator 3: Pemikiran/ *Abstrac Conceptualizations* (AC)				✓				✓				✓		
1. Menyukai pelajaran yang menuntut analisis logis				✓				✓				✓		
2. Melakukan persiapan sebelum belajar				✓				✓				✓		
3. Belajar secara terencana				✓				✓				✓		
4. Memahami materi dengan cepat				✓				✓				✓		
5. Berpikir secara logis				✓				✓				✓		
6. Menyukai informasi				✓				✓				✓		

7. Bersikap sesuai teori				✓				✓				✓			
Indikator 4: Tindakan/ *Active Experiments* (AE)				✓				✓				✓			
1. Belajar melalui praktik				✓				✓				✓			
2. Menyelesaikan tugas secara mandiri				✓				✓				✓			
3. Menyelesaikan tugas lebih awal				✓				✓				✓			
4. Mengerjakan soal yang belum di mengerti				✓				✓				✓			
5. Melaksanakan tugas sesuai ketentuan				✓				✓				✓			
6. Berpengaruh terhadap orang lain				✓				✓				✓			

C. Penilaian umum terhadap Rencana Pelaksanaan Pembelajaran (RPP).

(a.) Layak Tanpa Revisi (LTR).
b. Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

OK.

Makassar, ...

Penilai,

(Nama Lengkap dengan Gelar)

LEMBAR VALIDASI ANGKET/KUESIONER-4

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
1. Kisi-kisi Angket/Kuesioner				✓		
2. Relevansi Indikator dengan teori terbaru				✓		
3. Kesesuaian Indikator dengan tujuan pengumpulan data				✓		
4. Petunjuk Pengisian Instrumen				✓		
5. Proporsi Butir-butir Angket/Kuesioner terhadap Indikator				✓		
6. Kejelasan Pilihan Respon				✓		

B. KONSTRUK																
Indikator/Butir	Kesesuaian Butir - Indikator					Kejelasan Maksud pernyataan					Kaidah B. Indonesia					Keterangan
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Indikator 1: Perasaan/ Concrete Experiencee (CE)																
1. Belajar dari penglaman konkret			✓						✓				✓			

	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
2. Belajar berkelompok				✓					✓					✓		
3. Memiliki kepedulian terhadap orang lain				✓					✓					✓		
4. Terbuka terhadap orang lain				✓					✓					✓		
Indikator 2: Pengamatan/ *Reflective Observation* (RO)																
1. Belajar dari pengamatan				✓					✓					✓		
2. Belajar dengan berbagai cara				✓					✓					✓		
3. Menyimak makna dari hal yang diamati				✓					✓					✓		
4. Teliti dalam belajar				✓					✓					✓		
5. Teliti dalam ulangan				✓					✓					✓		
Indikator 3: Pemikiran/ *Abstrac Conceptualizations* (AC)																
1. Menyukai pelajaran yang menuntut analisis logis				✓					✓					✓		
2. Melakukan persiapan sebelum belajar				✓					✓					✓		
3. Belajar secara terencana				✓					✓					✓		
4. Memahami materi dengan cepat				✓					✓					✓		
5. Berpikir secara logis				✓					✓					✓		
6. Menyukai informasi				✓					✓					✓		

	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
7. Bersikap sesuai teori				✓					✓					✓		
Indikator 4: Tindakan/ *Active Experiments* (AE)																
1. Belajar melalui praktik				✓					✓					✓		
2. Menyelesaikan tugas secara mandiri				✓					✓					✓		
3. Menyelesaikan tugas lebih awal				✓					✓					✓		
4. Mengerjakan soal yang belum di mengerti				✓					✓					✓		
5. Melaksanakan tugas sesuai ketentuan				✓					✓					✓		
6. Berpengaruh terhadap orang lain				✓					✓					✓		

C. Penilaian umum terhadap Rencana Pelaksanaan Pembelajaran (RPP).

a. Layak Tanpa Revisi (LTR).
b. Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

Butir-butir revisi dituliskan langsung pada naskah

Makassar, ...

Penilai,

Nasrullah, S.Pd., M.Pd.

(Nama Lengkap dengan Gelar)

LEMBAR VALIDASI ANGKET/KUESIONER-4

LEMBAR PENILAIAN TES

A. Pengantar

Saya adalah peneliti yang akan melaksanakan penelitian dalam rangka penyusunan*):

a. Skripsi (S1)
b. Tesis (S2)
c. Disertasi (S3)
d. Laporan Penelitian lainnya

Sebagai rangkaian kegiatan penelitian tersebut, saya mengembangkan instrumen yang berbentuk tes tentang**):

Perilaku Pemecahan Masalah Matematika Pape

Saya meminta kesediaan Bapak/Ibu untuk memberikan penilaian isi dan konstruk LKS tersebut dan memutuskan kelayakannya untuk diterapkan dalam pembelajaran yang akan saya laksanakan. Penilaian RPP tersebut dilakukan dengan memberi tanda cek (√) pada kolom skala penilaian pada tabel penilaian di bawah ini. Skala penilaian yang diberikan adalah 1 (tidak valid), 2 (kurang valid), 3 (cukup valid) ,4 (valid), atau 5 (sangat valid) dengan berpedoman pada rubrik penilaian yang terlampir.Selain memberi penilaian, Bapak/Ibu diharapkan untuk memberi saran-saran atau komentar sesuai dengan aspek yang dinilai pada kolom keterangan.

Atas kesedian dan penilaian Bapak/Ibu saya mengucapkan terima kasih.

Keterangan:

*) Lingkarilah salah satu pilihan yang sesuai

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
1. Kisi-kisi tes				✓		
2. Relevansi Indikator dengan acuan teori.				✓		
3. Kesesuaian Indikator dengan tujuan pengumpulan data				✓		
4. Petunjuk Pengisian Tes				✓		
5. Proporsi Butir-butir Tes terhadap Indikator dan Aspek pengukuran				✓		
6. Kejelasan Pilihan Respon/Jawaban yang diharapkan				✓		
7. Kesesuaian alokasi waktu yang ditetapkan				✓		
8. Kesesuaian bentuk dan isi tes dengan tingkat perkembangan/usia responden				✓		

B. KONSTRUK																
Indikator/Butir Pertanyaan	Kesesuaian Butir – Indikator/ Aspek Pengukuran					Kejelasan Maksud pertanyaan					Kaidah B. Indonesia					Keterangan
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Indikator 1 : Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan kubus.				✓					✓					✓		
Indikator 2 : Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan balok.				✓					✓					✓		
Indikator 3 : Menyelesaikan permasalahan yang berkaitan dengan volume kubus.				✓					✓					✓		
Indikator 4 : Menyelesaikan permasalahan yang berkaitan dengan volume balok.				✓					✓					✓		

C. Penilaian umum terhadap tugas pemecahan masalah

a. Layak Tanpa Revisi (LTR).
b. Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).\

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

OK. Sudah direvisi

Makassar, ...

Penilai,

Dr. Idam Miyyi

(Nama Lengkap dengan Gelar)

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
1. Kisi-kisi tes				✓		
2. Relevansi Indikator dengan acuan teori.				✓		
3. Kesesuaian Indikator dengan tujuan pengumpulan data				✓		
4. Petunjuk Pengisian Tes				✓		
5. Proporsi Butir-butir Tes terhadap Indikator dan Aspek pengukuran				✓		
6. Kejelasan Pilihan Respon/Jawaban yang diharapkan				✓		
7. Kesesuaian alokasi waktu yang ditetapkan				✓		
8. Kesesuaian bentuk dan isi tes dengan tingkat perkembangan/usia responden				✓		

LEMBAR VALIDASI TES-2

B. KONSTRUK																
Indikator/Butir Pertanyaan	Kesesuaian Butir – Indikator/ Aspek Pengukuran					Kejelasan Maksud pertanyaan					Kaidah B. Indonesia					Keterangan
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Indikator 1 : Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan kubus.				✓					✓					✓		
Indikator 2 : Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan balok.				✓					✓					✓		
Indikator 3 : Menyelesaikan permasalahan yang berkaitan dengan volume kubus.				✓					✓					✓		
Indikator 4 : Menyelesaikan permasalahan yang berkaitan dengan volume balok.				✓					✓					✓		

C. Penilaian umum terhadap tugas pemecahan masalah

a. Layak Tanpa Revisi (LTR).
(b.) Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).\

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

Saran dituliskan langsung pada naskah

Makassar, ...

Penilai,

Nasrullah, S.Pd., M.Pd.

(Nama Lengkap dengan Gelar)

LEMBAR PENILAIAN PEDOMAN WAWANCARA

A. Pengantar

Saya adalah peneliti yang akan melaksanakan penelitian dalam rangka penyusunan*):

a. Skripsi (S1)
b. Tesis (S2)
c. Disertasi (S3)
d. Laporan Penelitian lainnya

Sebagai rangkaian kegiatan penelitian tersebut, saya mengembangkan instrumen yang berbentuk Pedoman WAWANCARA**):

Perilaku Pemecahan Masalah Matematika Pape.

Saya meminta kesediaan Bapak/Ibu untuk memberikan penilaian isi dan konstruk LKS tersebut dan memutuskan kelayakannya untuk diterapkan dalam pembelajaran yang akan saya laksanakan. Penilaian RPP tersebut dilakukan dengan memberi tanda cek (√) pada kolom skala penilaian pada tabel penilaian di bawah ini. Skala penilaian yang diberikan adalah 1 (tidak valid), 2 (kurang valid), 3 (cukup valid) ,4 (valid), atau 5 (sangat valid) dengan berpedoman pada rubrik penilaian yang terlampir.Selain memberi penilaian, Bapak/Ibu diharapkan untuk memberi saran-saran atau komentar sesuai dengan aspek yang dinilai pada kolom keterangan.

Atas kesedian dan penilaian Bapak/Ibu saya mengucapkan terima kasih.

Keterangan:

*) Lingkarilah salah satu pilihan yang sesuai

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
Petunjuk						
1. Kejelasan petunjuk Pedoman wawancara				✓		
2. Kejelasan Kriteria pedoman wawancara				✓		
3. Kejelasan jenis wawancara)				✓		
B. KONSTRUK						
a. Kategori Pertanyaan						
1. Item pertanyaan menggambarkan aspek yang akan diungkap				✓		
2. Item pertanyaan menginvestigasi aspek yang dinginkan				✓		
3. Item pertanyaan tidak mendorong responden memberikan jawaban yang diinginkan				✓		
4. Rumusan item pertanyaan bersifat menggali				✓		
5. Rumusan item pertanyaan tidak bersifat menuntun				✓		
6. Item pertanyaan sesuai dengan jenis wawancara yang dilakukan				✓		
7. Item pertanyaan menggunakan kata/kalimat				✓		

sesuai tingkat pendidikan, kognitif, dan psikologi responden						
b. Bahasa						
1. Menggunakan istilah/kalimat sederhana dan mudah dipahami				✓		
2. Penggunaan kaidah bahasa Indonesia yang baik dan benar				✓		
3. Tidak Menimbulkan Penafsiran Ganda				✓		

C. Penilaian umum terhadap Pedoman Observasi .....

a. Layak Tanpa Revisi (LTR).
b. Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

OK. Sudah direvisi

Makassar, ...

Penilai,

Dr. Ilham Minggu

(Nama Lengkap dengan Gelar)

B. Tabel Penilaian

Aspek yang Dinilai	Skala Penilaian					Keterangan
	1	2	3	4	5	
A. ISI						
Petunjuk						
1. Kejelasan petunjuk Pedoman wawancara			✓			
2. Kejelasan Kriteria pedoman wawancara			✓			
3. Kejelasan jenis wawancara)			✓			
B. KONSTRUK						
a. Kategori Pertanyaan						
1. Item pertanyaan menggambarkan aspek yang akan diungkap			✓			
2. Item pertanyaan menginvestigasi aspek yang dinginkan		✓				
3. Item pertanyaan tidak mendorong responden memberikan jawaban yang diinginkan		✓				
4. Rumusan item pertanyaan bersifat menggali		✓				
5. Rumusan item pertanyaan tidak bersifat menuntun			✓			
6. Item pertanyaan sesuai dengan jenis wawancara yang dilakukan		✓				
7. Item pertanyaan menggunakan kata/kalimat			✓			

sesuai tingkat pendidikan, kognitif, dan psikologi responden			✓			
b. Bahasa						
1. Menggunakan istilah/kalimat sederhana dan mudah dipahami			✓			
2. Penggunaan kaidah bahasa Indonesia yang baik dan benar			✓			
3. Tidak Menimbulkan Penafsiran Ganda			✓			

C. Penilaian umum terhadap Pedoman Observasi .....

a. Layak Tanpa Revisi (LTR).
b. Layak Dengan Revisi (LDR)
c. Tidak Layak (TL).

D. Saran-saran

Mohon Bapak/Ibu menuliskan butir-butir revisi berikut dan/atau menuliskan langsung pada naskah

Butir-butir revisi dituliskan langsung pada naskah

Makassar, ...

Penilai,

Nasrullah, S.Pd, M.Pd.

(Nama Lengkap dengan Gelar)

Pusat Pengkajian & Pengembangan
Matematika dan Pembelajarannya (P3MP)
Jurusan Matematika FMIPA UNM
Sekretariat: Gedung G Lantai 1, FMIPA UNM Makassar Telp.(0411)866014, Fax.(0411)840860

KETERANGAN VALIDITAS INSTRUMEN
NO. 235–P3MP/Val/M-V-17

Pusat Pengkajian & Pengembangan Matematika dan Pembelajarannya (P3MP) Jurusan Matematika telah memvalidasi instrumen untuk keperluan penelitian yang bejudul :

"Profil Perilaku Pemecahan Masalah Matematika Berdasarkan Klasifikasi Pape ditinjau dari Gaya Belajar Siswa Kelas VIII SMP Negeri 30 Makassar"

Oleh Peneliti :

Nama : ***Veby Rezki Hulsia***
NIM : 1311440002
Jurusan/Prodi : Matematika/Pendidikan Matematika (ICP)

Setelah diperiksa secara teliti dan saksama oleh tim validasi P3MP, maka instrumen penelitian tersebut telah memenuhi:

Validitas Konstruk dan Validitas Isi

Keterangan ini dibuat untuk dipergunakan sebagaimana mestinya.

Makassar, 30 Mei 2017

Validator 2

Nasrullah, S.Pd, M.Pd
NIP. 19830508 200912 1 006

Validator 1

Dr. Ilham Minggi, M.Si.
NIP. 19650330 199003 1 001

Mengetahui,
Ketua / Wakil P3MP Jurusan Matematika

Dr. Alimuddin, M.Si.
NIP. 19631231 198803 1030

2

INSTRUMENTS LATTICEWORK

Tabel Indikator Gaya Belajar Kolb

Dimensi	Aspek	Indikator	Nomor Soal
Perasaan/ *Concrete Experiencee* (CE)	1. Belajar 2. Sikap	- Belajar dari pengalaman konkret - Belajar berkelompok - Memiliki kepedulian terhadap orang lain - Terbuka terhadap orang lain	1-12 anak kalimat pertama (12 butir)
Pengamatan/ *Reflective Observation* (RO)	1. Belajar 2. Sikap	- Belajar dari pengamatan - Belajar dengan berbagai cara - Menyimak makna dari hal yang diamati - Teliti dalam belajar - Teliti dalam ulangan	1-12 anak kalimat ke-dua (12 butir)
Pemikiran/ *Abstrac Conceptualizations* (AC)	1. Belajar 2. Sikap	- Menyukai pelajaran yang menuntut analisis logis - Melakukan persiapan sebelum belajar - Belajar secara terencana - Memahami materi dengan cepat - Berpikir secara logis - Menyukai informasi - Bersikap sesuai teori	1-12 anak kalimat ke-tiga (12 butir)
Tindakan/ *Active Experiments* (AE)	1. Belajar 2. Sikap	- Belajar melalui praktik - Menyelesaikan tugas secara mandiri - Menyelesaikan tugas lebih awal - Mengerjakan soal yang belum dimengerti - Melaksanakan tugas sesuai ketentuan - Berpengaruh terhadap orang lain	1-12 anak kalimat ke-empat (12 butir)

Tabel Kisi-Kisi Soal Pemecahan Masalah Matematika

Kompetensi Dasar	Indikator	Bentuk Soal	Nomor Soal
3.9 Menentukan luas permukaan dan volume kubus, balok, prisma, dan limas	1. Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan kubus.	Cerita	1
	2. Menyelesaikan permasalahan sehari-hari yang berkaitan dengan luas permukaan balok.	Cerita	2
	3. Menyelesaikan permasalahan yang berkaitan dengan volume kubus.	Cerita	3
	4. Menyelesaikan permasalahan yang berkaitan dengan volume balok.	Cerita	4

Lembar Pedoman Wawancara

Wawancara yang dilakukan pada peneilitian ini merupakan wawancara semi terstruktur di mana peneliti diberi kebebasan sebebas-bebasnya dalam bertanya dalam memilih alur dan setting wawancara. Pada wawancara semi terstruktur tidak ada pertanyaan yang telah disusun sebelumnya, peneliti hanya mengandalkan *guideline* wawancara sebagai pedoman penggalian data. Wawancara jenis ini memungkinkan mencakup ruang lingkup lebih besar guna keperluan merangkum pendapat dan jawaban responden.

Tabel Indikator Wawancara untuk Perilaku Pemecahan Masalah

Perilaku Pemecahan Masalah	Indikator	Pertanyaan Wawancara
Direct Translation Approach-proficient (DTA-proficient)	Siswa langsung menggunakan elemen-elemen yang disajikan dalam masalah pada perhitungan matematis tanpa membaca masalah berulang kali. Siswa tidak menunjukkan perilaku transformatif dengan merekam dan mentransformasikan setiap informasi yang disajikan ke dalam kalimat matematika, dan tidak menunjukkan pula penggunaan konteks masalah selama perhitungan, meskipun jawaban yang diberikan dinyatakan sesuai dengan konteks masalah.	1. Meminta siswa menjelaskan permasalahan pada soal cerita. 2. Meminta siswa menjelaskan penyelesaian soal cerita secara keseluruhan (langkah-langkah penyelesaian). 3. Menanyakan siswa apakah membaca ulang soal cerita.
Direct Translation Approach-not proficient (DTA-not proficient);	Siswa kurang kompeten dalam memahami masalah, menentukan solusi, dan melakukan perhitungan matematisnya. Karakteristik dari kategori ini adalah siswa merasa ragu-ragu sehingga tidak dapat menentukan solusi penyelesaian yang tepat. Siswa membaca ulang soal tetapi siswa tidak menunjukkan perilaku transformatif dengan merekam dan mentransformasikan setiap informasi yang disajikan ke dalam kalimat matematika. Perhitungan yang dilakukan kurang bermakna	

	dalam kaitannya dengan masalah (hanya dilakukan untuk menyelesaikan soal).	
Direct Translation Approach-limited context (DTA-limited context);	Siswa juga langsung menerjemahkan elemen-elemen dalam masalah untuk digunakan dalam perhitungan matematis disertai dengan sedikit penjelasan dalam konteks masalah (penjelasan terbatas). Siswa membaca ulang masalah yang disajikan diikuti langsung dengan perhitungan. Penjelasan terbatas juga mungkin diberikan pada perhitungan.	
Meaning-Based Approach-full context (MBA-full context);	Siswa membaca masalah berulang kali, siswa menuliskan informasi yang disajikan sesuai dengan konteks masalah yang akan digunakan dalam perhitungan. Jawaban akhir siswa menunjukkan pemahaman siswa terhadap makna atau relevansinya dengan masalah. Penjelasan yang diberikan pada setiap langkah matematis didasarkan pada pernyatan - pernyataan pada konteks masalah tetapi siswa tidak memberikan alasan atau dasar dalam beberapa perhitungan yang dilakukan	
Meaning-Based Approach-justification (MBA-justification).	Siswa membaca masalah berulang kali, siswa menuliskan informasi yang disajikan sesuai dengan konteks masalah yang akan digunakan dalam perhitungan. Jawaban akhir siswa menunjukkan pemahaman siswa terhadap makna atau relevansinya dengan masalah. Penjelasan pada setiap langkah matematis didasarkan pada pernyatan-pernyataan pada konteks masalah dan siswa memberikan alasan atau dasar dalam setiap perhitungan yang dilakukan.	

3

INSTRUMENTS TEST

INSTRUMEN GAYA BELAJAR MODEL DAVID KOLB

A. Identitas Responden

Nama :

Kelas :

No. Absen :

B. Petunjuk Pengisian

1. Isilah identitas anda secara lengkap
2. Angket ini terdiri dari 12 pertanyaan untuk masing-masing kolom
3. Jawablah dengan jujur, sebab tidak ada salah dan benar
4. Isilah angka pada titik-titik awal setiap pertanyaan, dengan gambaran :

   Pilihan Jawaban :

   Berikan nilai **4** pada pernyataan yang **sangat sesuai** dengan diri anda

   Berikan nilai **3** pada pernyataan yang **sesuai** dengan diri anda

   Berikan nilai **2** pada pernyataan yang **agak sesuai** dengan diri anda

   Berikan nilai **1** pada pernyataan yang **tidak sesuai** dengan diri anda

5. Letakkan jawaban (angka) disamping pernyataan yang cocok dengan diri anda
6. Cara pengisian dimulai dari samping kiri ke kanan

   Contoh :

0	Ketika saya belajar	4. saya bahagia	1. saya bebas	2. saya logis	3. saya hati-hati

Keterangan :

Pada contoh diatas, penjawab memberi nilai 4 (sangat sesuai dengan anda) pada anak kalimat saya bahagia, sebab ketika dia belajar dia merasa bahagia; memberi nilai 3 (sesuai dengan anda) pada anak kalimat saya hati-hati; memberi nilai 2 (agak sesuai dengan anda) pada anak kalimat saya logis, sebab ketika dia belajar logis/nalar agak cocok

dengan penjawab; dan memberi nilai 1 (tidak sesuai) pada anak kalimat saya bebas sebab tidak sesuai dengan penjawab ketika ia belajar

1	Ketika saya sedang belajar	__saya suka melibatkan perasaan	__saya suka memperhatikan dan mendengarkan	__saya suka memikirkan dengan ide	__saya suka melakukan sesuatu
2	Saya belajar terbaik ketika	___saya mempercayai firasat dan perasaan	___saya mendengarkan dan memperhatikan dengan hati-hati	___ saya mengandalkan pemikiran logis	___ saya bekerja keras untuk membuat sesuatu selesai
3	Ketika saya sedang belajar	_saya mempunyai reaksi dan perasaan yang kuat	__saya tenang dan bersikap hati-hati	__saya cenderung untuk mengemukakan alasan keluar	__saya bertanggung jawab tentang sesuatu
4	Saya belajar dengan	__perasaan	__melihat	__berpikir	__mengerjakan
5	Ketika saya sedang belajar	__saya terbuka untuk pengalaman baru	__saya melihat masalah dari semua sisi	__saya suka menganalisis sesuatu, membaginya ke dalam bagian-bagian	__saya suka untuk mencoba sesuatu diluar
6	Ketika saya sedang belajar	__saya orang yang intuitif	__saya seorang yang cepat dalam mengamati	__saya adalah seorang yang logis	__saya adalah seorang yang aktif
7	Saya belajar terbaik ketika	__hubungan pribadi	__pengamatan	__teori-teori rasional	__kesempatan untuk mencoba dan praktek
8	Ketika saya sedang belajar	__saya merasa terlibat secara pribadi dalam sesuatu	__saya membutuhkan banyak waktu untuk bertindak	__saya menyukai ide/gagasan dan teori	__saya suka melihat hasil dari pekerjaan saya
9	Saya belajar terbaik ketika	__saya mengandalkan perasaan	__saya mengandalkan pengamatan saya	__saya mengandalkan ide saya	__saya dapat mencoba sesuatu untuk diri saya sendiri
10	Ketika saya sedang belajar	__saya seorang yang mau menerima orang lain	__saya seorang yang bersikap hati-hati	__saya seorang rasional	__saya seorang bertanggungjawab
11	Ketika saya sedang belajar	__saya menjadi terlibat	__saya suka mengamati	__saya suka mengevaluasi sesuatu	__saya suka menjadi aktif
12	Saya belajar	__saya	__saya hati-	__saya	__saya praktis

	terbaik ketika	menerima dengan pandangan terbuka	hati	menganalisis ide-ide	

TES PEMECAHAN MASALAH MATEMATIKA

Mata Pelajaran : Matematika

Pokok Bahasan : Kubus dan Balok

Kelas : VIII

Waktu : 60 Menit

Petunjuk Pengerjaan Soal

a. Tulislah nama, nomor absen, dan kelas anda pada kolom yang tersedia pada lembar jawab.
b. Jawablah setiap soal dengan langkah-langkah atau uraian penyelesaian selengkap dan sejelas mungkin bukan hasil akhirnya saja.
c. Berikan penjelesan pada setiap langkah-langkah pengerjaan.
d. Jika belum memahami maksud soal, silahkan baca ulang soalnya, dan lafalkan kalimat soalnya.
e. Kerjakan semua soal, diperbolehkan menyelesaikan soal tidak urut tetapi tuntas pada tiap nomornya.
f. Periksa kembali jawaban anda

1. Ibu Hasan membuat kue berbentuk kubus dengan ukuran 20cm x 20cm x 20cm. Jika ia akan memasukkan kue tersebut ke dalam kardus yang terbuat dari kertas karton. Berapa luas kertas karton minimal yang diperlukan Ibu Hasan?
2. Novi akan membungkus kadonya dengan kertas kado. Kado Novi berbentuk balok berukuran 20cm x 10cm x 12cm. Tentukan luas kertas kado minimal yang diperlukan untuk membungkus kado tersebut!
3. Lisa memiliki sebuah kotak nmakanan berbentuk kubus. Lisa ingin mengisi kotak makanan tersebut hingga penuh dengan $729cm^3$ nasi. Tentukan panjang rusuk kotak makanan lisa!

4. Irwan memiliki bak berbentuk balok dengan tinggi 60cm, lebar 60cm dan panjang 80cm. Bak tersebut akan diisi air. Berapa banyak air yang dibutuhkan untuk mengisi 2/3 bagian bak mandi Irwan?

No.	Kunci Jawaban
1.	Diketahui : Panjang rusuk (r) = 20cm Ditanya : luas permukaan kubus Jawab : $L_p = 6r^2$ $= 6 \times 20^2$ $= 6 \times 400$ $= 2400\ cm^2$ Jadi, luas kertas karton yang diperlukan Bu Hasan adalah $2400\ cm^2$
2.	Diketahui : Panjang kado (p) = 20cm, lebar (l) = 10cm, tinggi (t) = 12 Ditanya : Luas permukaan balok Jawab : Lp = 2 (pl + pt + lt) = 2 (20.10 + 20.12 + 10.12) = 2 (200 + 240 + 120) = 2 (560) $= 1120\ cm^2$ Jadi, luas kertas kado minimal yang diperlukan Novi untuk membungkus kado tersebut adalah $1120\ cm^2$
3.	Diketahui : Volume kubus = $729\ cm^3$ Ditanya : panjang rusuk kotak makanan Jawab : $V = r^3$ $512 = r^3$ $r = \sqrt[3]{729}$ r = 9 cm Jadi, panjang rusuk kotak makanan Lisa adalah 9 cm.
4.	Diketahui : Panjang bak (p) = 80cm, Lebar (l) = 60cm, Tinggi (t) = 60cm Ditanya : 2/3 Volume balok (v) Jawab : 2/3 x V = p x l x t = 2/3 (80 x 60 x 60) = 2/3 (288.000) $= 192.000\ cm^3$ Jadi, banyak air yang dibutuhkan untuk mengisi 2/3 bagian bak

	Irwan adalah 192.000 cm^3

APPENDIX B

RESEARCH RESULTS

- KOLB'S LEARNING STYLE QUESTIONNAIRE RESULTS
- MATHEMATICS PROBLEM-SOLVING TEST RESULTS
- INTERVIEW TRANSCRIPTS

1

KOLB'S LEARNING STYLE QUESTIONNAIRE

HASIL PEROLEHAN SKOR PERNYATAAN ANGKET GAYA BELAJAR SISWA KELAS VIII.1 DAN VIII.2 SMP NEGERI 30 MAKASSAR

| No. | Kelas | Nama | SKOR PERNYATAAN | | |

| | | |

| | | |

| | | |

2

MATHEMATICS PROBLEM-SOLVING TEST RESULTS

Lembar Jawaban

Nama : Assimilator

No. HP : 081356779990

Kelas : 9.1

---

1. Dik : kubus dengan ukuran 20 cm x 20cm x 20cm

   Dit : L. kertas karton yang diperlukan untuk memasukkan kue

   Peny : $6 \times s^2 = 6 \times 20^2$

   $= 6 \times 400$

   $= 2400 \text{ cm}^2$

   Jadi L. kertas karton adalah 2400 cm^2

2. Dik : kado berukuran 20 cm x 10 cm x 12cm

   Dit : L. kertas kado

   Peny : ~~$(2 \times p \times t) + (p \times l) + (t \times l)$~~

   ~~$= (2 \times 20 \times 10) + t$~~ $= 2(p \times l) + (p \times t) + (t \times l)$

   $= 2\{(20 \times 10) + (20 \times 12) + (10 \times 12)\}$

   $= 2(200 + 240 + 120) = 2 \times 560 = 1120 \text{ cm}^2$

3. Dik = kubus = 729 cm^3

   Dit = Rusuknya ... ?

   Peny = Rusuk = sisi

   $= 6 \times s^2 = 729$

   $s^2 = 729$

   $s = \sqrt{729}$

   $= 27$

   Jadi rusuknya = 27 cm

4. Dik = Balok = t = 60cm

l = 60 cm

P = 80cm

Dit = Berapa banyak air jika diisi $\frac{2}{3}$ bagian.

~~Peny = Balok = $2\{(p \times l) + (p \times t) + (t \times l)\}$~~

~~$= 2\{(80 \times 60) + (80 \times 60) + (60 \times 60)\}$~~

~~$= 2\,(4800 + 4800 + 3600)$~~

~~$= 2\,($~~ ← Salah

$V = p \times l \times t$

$= 80\,cm \times 60\,cm \times 60\,cm$

$= 288000\,cm^3$

Jika $\frac{2}{3}$ v. kolam = $\frac{2}{3} \times 288000$

$= 192.000\,cm^3$

Jadi $\frac{2}{3}$ kolam = $192.000\,cm^3$

Lembar Jawaban

Nama : Diverger

No. HP : 08991883628

Kelas : VIII. 2

---

1. Dik = ukuran 20 cm x 20cm x 20cm

Dit = luas permukaan kubus

Peny = ~~20 cm x 20 cm x 20 cm~~ luas permukaan = $6r^2$

~~= 400 x 20~~

~~= 8000 cm~~

Peny = 6×20^2

$= 6 \times 400$

$= 2400$ cm

Jadi, luas kertas karton yang diperlukan adalah 2400 cm.

400
6
2400

2. Dik = ukuran 20 cm x 10 cm x 12 cm

Dit = luas permukaan

luas permukaan = p x l x t

peny = 20 cm x 10 cm x 12 cm

= 200 cm x 12 cm

= 2400 cm

Jadi, luas kertas kado yang diperlukan adalah 2400 cm

200
12
400
200
2400

3. Dik = V = 729 cm^3

Dit = r ... ?

Peny = ~~r^3~~

$729 cm^3 = r^3$

$r = \sqrt[3]{729}$

$r = 9$ cm

Jadi, panjang rusuk kotak mainan tsb adalah 9 cm

9
9
81
9
729

4. Dik = t = 60 L = 60 P = 80

Dit = V ... ?

Peny = p x l x t

= 80 x 60 x 60

= 288000 ~~cm~~

karena yang di pertanyakan 2/3 bagian maka

$= 288.000 \times \frac{2}{3}$

$= \frac{576.000}{3} = 192 cm^3$

Jadi banyak air yang di butuhkan untuk mengisi 2/3 bagian adalah: 192 cm^3

Lembar Jawaban

Nama : Accomodator

No. HP : 087840244004

Kelas : VIII.2

1. Dik : Kue berbentuk kubus ukurannya 20cm x 20cm x 20cm

Dit : Luas karton minimal yg diperlukan

Penyelesaian : Sisi kubus ada 6

Rusuknya 20cm

Jadi kita menggunakan rumus $6 \times r^2$ (r^2 karena satu sisi)

Luas Permukaan kubus = luas karton minimal yg dibutuhkan

$= 6 \times r^2$

$= 6 \times (20 \times 20)$

$= 6 \times 400$

$= 2400\ cm^2$

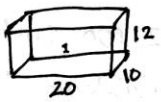
Sehingga luas karton minimal yang dibutuhkan tuTlasan u/ membuat kardus adalah $2.400\ cm^2$

2. Dik : kado Novi ukurannya $20 \times 10 \times 12$ cm, Jadi.

$P = 20cm, L = 10cm, t = 12cm$

Dit : Kertas kado yg diperlukan (Minimal) u/ membungkus kado Novi

Penyelesaian :



Kertas kado = Luas Permukaan

$= 2(20 \times 12) + 2(10 \times 12) + 2(20 \times 10)$

↓ Sisi depan dn Blakang ; ↓ Sisi Samping ; ↓ Sisi atas dn bawah

$= 2(240) + 2(120) + 2(200)$

$= 480 + 240 + 400$

$= 1120\ cm^2$

1
48
24
40 +
112

Sehingga luas kertas kado yg diperlukan u/ membungkus kado novi adalah $1120\ cm^2$.

3. Dik :- Kotak makanan terisi hingga penuh dengan 729 cm^3 Nasi (Volume-kotak makanan)
- Kotaknya berbentuk kubus

Dit : Panjak rusuk kotak makanan Lisa

Penyelesaian : Volume = 729 cm^3

$r \times r \times r = 729\ cm^3$

$r^3 = 729$

$\sqrt{r^3} = \sqrt{729}$

$r = 27\ cm$

25×25 = 625
26×26 = 676.
27×27 = 729

Sehingga Panjang rusuk kotak makanan Lisa adalah 27 cm

4. Dik : - Bak berbentuk balok t = 60 cm, L = 60 cm, P = 80 cm.

Dit : Berapa banyak air yg dibutuhkan u/ mengisi 2/3 bagian bak ?

Penyelesaian ; Volume balok = Volume bak ketika terisi Full.

Volume balok = $p \times l \times t$

$= 80 \times 60 \times 60$

$= 80 \times 3600$

$= 288.000\ cm^3$

Karena yg ditanyakan 2/3 bagian bak ; maka selanjutnya.

Volume 2/3 bak $= \frac{2}{3} \times 288.000$

$= \frac{576.000}{3}$

$= 192.000\ cm^3$

4
36
8×
288
288
2×
576
192
3 | 576
3
276
27
6
6
0

Sehingga banyaknya air yang dibutuhkan u/ mengisi 2/3 bagian bak adalah 192.000 cm^3 / 192.000 kubik.

(11)

Lembar Jawaban

Nama : Converger

No. HP : 082389555101

Kelas : 9.1 (Archimedes)

---

1. Dik: Kue kubus berukuran 20 cm
   Dit: luas kertas karton minimal = ...?
   Peny: [redacted]
   Luas permukaan
   => $6 \times s^2$ => sisi (kubus ada 6 sehingga untuk mencari luas permukaannya harus dikali 6)
   => 6×20^2 Jadi, luas karton yang
   => 6×400 dibutuhkan yaitu 2400 cm^2
   = 2400 cm^2

2. Dik: Kado Novi berbentuk balok berukuran 20 (p) 10 (l) 12 (t)
   Dit: Luas kertas kado minimal yang diperlukan (luas permukaan).
   Peny: Luas permukaan
   => $2 \times (p \times l) + (p \times t) + (l \times t)$
   => $2 \times (20 \times 10) + (20 \times 12) + ([redacted] 10 \times 12)$
   => $2 \times (200 + 240 + 120)$
   => 2×560
   => 1120 cm^2
   Jadi, luas kertas kado minimal yang dibutuhkan Novi untuk membungkus kado yaitu 1120 cm^2

3. Dik: Lisa memiliki kotak berisi makanan penuh dengan 729 cm^3 nasi
   Dit: Tentukan panjang rusuk kotak makanan Lisa.
   Peny: Volume = rusuk x rusuk x rusuk (r^3)
   729 $cm^3 = r^3$
   $r^3 = 729\ cm^3$
   $r = \sqrt[3]{729}$
   $r = 9$ cm
   Jadi, panjang rusuk kotak makan Lisa yaitu 9 cm.

4. Dik : Irwan memiliki bak berbentuk balok dengan tinggi 60 cm, lebar 60 cm, panjang 80 cm yang akan diisi air.

Dit : Berapa banyak air yang dibutuhkan untuk mengisi 2/3 bak mandi Irwan? (volume = ... ?)

Peny : Volume = 2/3 (2x (P x l) + (P x t) + (l x t))

(karena yang dicari hanya luas 2/3 maka rumusnya menggunakan 2/3)

= 2/3 (2x (80 x 60) + (80 x 60) + (60 x 60))

= 2/3 (2x (4800 + 4800 + 1200))

= 2/3 (2 x 10.800)

= 2/3 x 21600

= 14.400 cm³

Jadi, banyak air yang dibutuhkan untuk mengisi 2/3 bak yaitu 14.400 cm³

Volume : P x l x t

= 80 x 60 x 60

= 4.800 x 60

= 288.000

Karena yang dicari adalah banyak air untuk 2/3 bak maka:

V = 2/3 x volume

= 2/3 x 288.000

= 192.000 cm³

Jadi, banyak air yang dibutuhkan Irwan untuk mengisi 2/3 bak yaitu 192.000 cm³

3

INTERVIEW TRANSCRIPTS

Transkrip Wawancara Subjek *Converger*

PENELITI : Hai dek, kan sudah meki kerja soal dari kakak, nah sekarang kakak mau wawancarai ki tentang jawabanta, ada beberapa hal yang mau kakak pastikan.

SCON : Oh iye kak.

PENELITI : Jadi pertama kakak mau tanya seputar hasil jawabanta dari soal yang kakak kasih. Waktunya tadi kita kerjakan soal nomor 1 kita baca ulang – ulang soalnya atau tidak ?

SCON : Tidak

PENELITI : Jadi satu kali baca langsung meki kerja ?

SCON : iya

PENELITI : Jadi satu kali baca langsung meki paham soalnya ?

SCON : Iya

PENELITI : Kalau begitu kakak mau tanya, ini maksudnya 20 cm x 20 cm x 20 cm, apa maksudnya ini dek ?

SCON : Panjang rusuknya, rusuk kubus

PENELITI : Selanjutnya dek, ini kenapa pakai rumus 6 x s^2?

SCON : Karena kubus ada 6 sisi nya, jadi enam kali sisinya untuk keseluruhan luas permukaannya.

PENELITI : s^2? Maksudnya itu sisi kuadatrat atau apa?

SCON : Iye kak s itu sisi.

PENELITI : Oh yang lebih tepatnya dek 6 kali sisi, karena kan sesuai tadi pernyataanta ada 6 sisinya, nah sedangkan sisi itu hasil dari rusuk x rusuk atau r^2. Jadi rumus yang lebih tepatnya untuk cari luas permukaan kubus 6 x s atau 6 x r^2.

PENELITI : Terus liatki lagi pekerjaan ta di, lanjutki nomor 2. Kalau ini di dalam soal 20 cm x 10 cm x 12 cm itu apa ?

SCON : Tinggi

PENELITI : Yang mana tinggi ?

SCON : 12 cm

PENELITI : Terus yang 20 cm dan 10 cm itu apa ?

SCON : 10 cm itu lebar , 20 cm panjang

PENELITI : Ini apa ini yang 20 x 10 x 12 ?

SCON : Rumus untuk mencari volume balok, panjang x lebar x tinggi

PENELITI : Apa yang ditanyakan yang nomor 2 ?

SCON : Luar kertas kado, minimal yang digunakan untuk membungkus kado

PENELITI : Jadi kalau di dalam matematikanya ini apa yang di cari ?

SCON : Luas permukaannya, luas permukaannya kertas kado

PENELITI : Kertas kadonya itu bentuknya apa ?

SCON : Balok

PENELITI : Jadi ini kita pakai rumus 2 x (p x l) + (p x t) + (l x t) ? Kita tahu kenapa bisa begitu rumusnya?

SCON : Karena begitu ji kak nakasi tau ka guru ku kalau mau cari luas permukaan, jadi langung mi saja ku pakai baru ku masukkan mi angkanya seperti yg ku tulis di diketahuinya.

PENELITI : Oh begitu.Terus ini disini di nomor 2 kenapa 1120 cm^2 apa yang di maksud pangkat 2 di centimeternya ?

SCON : Kalau yang dicari di nomor 2 luas permukaan, terus kalau luas permukaan pakai pangkat 2 kalau mencari volume pangkat 3

PENELITI : Lanjut di nomor 3, kalau di nomor 3 langsung jki satu kali baca baru langsung jawab ?

SCON : Tidak kak, karena waktu ku baca semua ki dulu, baru pas lagi ku kerja kerja mi kubaca ulangki untuk ku pastikan ini yang mau dicari pakai rumus volume betulan ji kah.

PENELITI : Ini nomor 3, apa yang di tanyakan ?

SCON : Panjang rusuk kotak makanan lisa

PENELITI : Apa yang kita tahu dari soal nomor tiga ini?

SCON : 729cm^3 nasi untuk penuhiki kotak makanannya lisa samaji bilang itu volume fullnya kubus kak

PENELITI : Ada yang lain?

SCON : Terus mau ki dicari panjang rusuk kotak makanannya

PENELITI : Jadi bagaimana cara carinya dek?

SCON : Pakai itu kak rumus volume kubus, bedanya ini ditau mi volumenya, jadi itu mi 729cm^3 = rusuk x rusuk x rusuk. Jadi bisa ma cari ki rusuknya langsung.

PENELITI : Terus kenapa itu bisa ada akar pangkat tiga dari 729, dan darimana dapat 9?

SCON : Hmmm.. anu kak, kan r pangkat tiga ki, na r ji saja yang mau dicari, makanya hanya untuk dapatkan r saja harus ku akar pangkat tiga ki. Kalau sembilannya hasil dari coba coba ka, karena yang ku tahunya itu 5^3 = 125, nah masi jauh ki dari 729, kalau 10^3= 1000, justru kelebihan, tp sedikit mami lebihnya, jadi ku cobami 9^3, ternyata hasilnya 729. Jadi itumi akar pangkat tiga dari 729, yah 9, dan itu mi juga kak panjang rusuk kotak kubus atau kotak makannya lisa.

PENELITI : Lanjut mki di nomor 4, nah ini nomor 4 banyak coretannya. Di nomor 4 satu kali baca jki soalnya ?

SCON : Soalnya satu kali baca, tapi jawabannya tidak

PENELITI : Saat kita ulang jawabnya, kita baca ulang soalnya ?

SCON : Iya

PENELITI : Terus, bagaimanaki bisa langsung ubahki jawabanta ?

SCON : Kuamati ulang lagi soalnya, karena ada kurasa aneh

PENELITI : Yang bagian manaki rasa aneh jawaban pertamata ?

SCON : Hasilnya

PENELITI : Terrus, kenapaki bisa lagi dapat lagi penyelesaian seperti ini ?

SCON : Karena harus lagi di amati kembali soalnya , di tahumi yang di cari itu volumenya bukan luas permukanaanya

PENELITI : Jadi kita cari dulu volumenya, terus kalau sudah dapat volumenya baru di apakan ?

SCON : Baru di di kali 2/3, karena di soal yang ditanya air yang dibutuhkan untuk mengisi 2/3 bak mandi

PENELITI : Jadi hasilnya berapa ?

SCON : 192.000 cm3

PENELITI : Kenapa kubik ? kenapa tidak sama seperti sebelunya ? kenapa bukan pangkat 2 ? kenapa disini pangkat 3

SCON : Karena volume, jadi pangkat 3. Kalau luas permukaan pangkat 2, beda sama volume.

PENELITI : Oh iya dek, terima kasih.

Transkrip Wawancara Subjek *Diverger*

PENELITI : Hai... Tadi kan sudah kerjakan soal dari kakak, sekarang kakak mau nanya-nanya. Bemana soalnya dipahami ji?

SDIV : Iye kak. Jangki susah nah tanyanya. heheh

PENELITI : Ndak ji dek, tentang ini ji yang sudah kita kerjakan.

SDIV : Oh iye kak.

PENELITI : Langsung mi nah ke soal nomor satu, kita baca sekali saja soalnya nomor satu atau kita baca berulang kali?

SDIV : sekali ji.

PENELITI : Apa yang diketahui dari soalnya?

SDIV : ukurannya 20 kali 20 kali 20cm.

PENELITI : Apa yang mau dicari jawabannya?

SDIV : Luas permukaan kubus kak.

PENELITI : Gimana caranya dek?

SDIV : Pakai rumus $6r^2$.

PENELITI : Kenapa $6r^2$?

SDIV : Karena begitu memang kak rumus untuk luas permukaan kubus.

PENELITI : Ini ada coretan disamping, apa ini dek?

SDIV : Oh itu kak, salah pakai kak, terakhir pi ku ingat kalau rumus volume kubus itu.

PENELITI : Jadi berapa jawabannya?

SDIV : 2400 cm kak.

PENELITI : cm satuannya?

SDIV : Iye kak

PENELITI : Lanjut ke nomor dua, nomor dua dibaca sekali atau berulang-ulang?

SDIV : Kuulang kak.

PENELITI : Informasi apa yang didapat dari soal nomor dua?

SDIV : Ukuran 20 x 10 x 12 cm..

PENELITI : Apa yang ditanyakan?

SDIV : Luas kertas kado.

PENELITI : Luas kertas kadonya itu sama dengan luas bentuk bangun ruang apa?

SDIV : Maksudnya kak?

PENELITI : Luas permukaan kubus atau luas permukaan balok?

SDIV : ohh.. balok kak

PENELITI : Jadi gimana cara hitungnya?

SDIV : Tinggal dikalikan semua itu kak.

PENELITI : Semua? Semua yang mana?

SDIV : 20 kali 10 kali 12 kak.

PENELITI : Begitu dek?

SDIV : Iye kak

PENELITI : Terus dapat berapa?

SDIV : 2400 cm.

PENELITI : 2400 cm itu apa?

SDIV : Luas kertas kado yang diperlukan kak.

PENELITI : Ok, sekarang dinomor tiga, soalnya dibaca sekali atau berulang-ulang saat kita kerjakan ini nomor tiga?

SDIV : Tidak kuulangi baca kak.

PENELITI : Dari soal informasi apa yang bisa kita dapat?

SDIV : Volumenya 729cm^3, baru disuruh ki cari panjang rusuk kotak makananannya lisa?

PENELITI : Jadi bagaimana cara carinya?

SDIV : Pakai rumus volume kubus.

PENELITI : Apa rumusnya?

SDIV : V = r^3.

PENELITI : Kenapa bisa begitu rumusnya?

SDIV : Begitu memang ji kak dipelajari.

PENELITI : Kenapa mesti r^3, bukan p atau l, atau bahkan t? Apa alasannya r?

SDIV : Ndak ku tahu mi itu kak, karena begitu ji na kasi ka guru ku.

PENELITI : Kita tahu ji r itu apa?

SDIV : Rusuk kak.

PENELITI : Jadi berapa rusuknya?

SDIV : 9 cm

PENELITI : Darimana dapat 9?

SDIV : Hasil dari akar pangkat tiganya itu 729, baru ku coba-coba mi angka berapa pangkat tiga dapat itu, ku dapat mi 9.

PENELITI : Pindah mi pale ke nomor empat, nomor empat dibaca sekali atau berulang kali?

SDIV : Berulang kak

PENELITI : Apa yang di tahu dari soal nomor empat?

SDIV : Tinggi 60, lebar 60, panjang 80.

PENELITI : Ada lagi?

SDIV : Berbentuk balok kak.

PENELITI : Apa yang ditanyakan?

SDIV : Volume balok kak, eh volume 2/3nya bak kak.

PENELITI : Jadi gimana cara carinya?

SDIV : Yah dicariki dulu volume baknya baru di kalikan 2/3 kak.

PENELITI : Dapatnya berapa?

SDIV : 192 cm^3.

PENELITI : Kenapa bisa 192 cm^3?

SDIV : Karena 576.000 dibagi 3 kak.

PENELITI : Memangnya 576.000 dibagi 3 hasilnya 192 dek?

SDIV : Hmmm.. eh 192.000 kak. Kuluapai tiga nolnya.

PENELITI : Oh iya dek. Satuannya?

SDIV : cm^3.

PENELITI : Kenapa cm^3?

SDIV : Karena setahu ku kalau volume memang begitu satuannya kak cm^3.

PENELITI : Ndak ada alasan lainta?

SDIV : Begitu ji.

PENELITI : Oh iya dek. Terima kasih.

Transkrip Wawancara Subjek *Accomodator*

PENELITI : Haloo.. Terima kasih dek sudah kerjakan soal dari kakak. Nah, sekarang kakak mau nanya – nyanya tentang pekerjaan ta ini. Gimana soalnya? Bisa ji kita kerjakan semua?

SACC : Oh iye kak, bisa ji.

PENELITI : Langsung meki ke nomor satu nah. Di nomor satu setelah kita baca soalnya, Info apa yang ada di soalnya?

SACC : rusuk kubusnya kak 20cm.

PENELITI : Apa yang mau dicari di soalnya?

SACC : Luas permukaan kubus kak atau luas karton minimal yang diperlukan untuk buat kardus.

PENELITI : Kenapa pakai rumus 6 x r^2?

SACC : Karena itu mi kak rumusnya untuk cari luas permukaan kubus kak.

PENELITI : Kita tahu kenapa bisa 6 x r^2 rumusnya?

SACC : Ohh.. anu kak. Karena ada 6 sisinya kubus kak toh terus itumi r^2 untuk bisa dapat luas satu sisi. Jadi mi kak rumusnya $6r^2$.

PENELITI : Terus waktunya kita kerjakan ini soal nomor satu sekali ji kita baca atau kita ulang-ulang atau bagaimana?

SACC : Kubaca sekali dulu kak untuk mau ku tahu apa maksud soalnya, baru pas ku kerjakan, melihat ja lagi ke soalnya tp yang penting pentingnya ji untuk ku tulis.

PENELITI : Lanjut di nomor dua, nomor dua kita baca sekali atau berulang-ulang?

SACC : Sama ji kak kayak nomor satu, baca sekali dulu semua soal nomor dua, baru ku baca lagi di kalimat pentingnya yang itu ada angkanya kak.

PENELITI : Apa kita yang ketahui dari soalnya?

SACC : Bentuk balok itu kadonya novi, panjangnya 20 cm, luasnya 20cm, baru tingginya 12 cm.

PENELITI : Baru apa yang mau dicari?

SACC : eee.. luas permukaan balok.

PENELITI : Terus bagaimana cara cari jawabannya? Yang mana disini rumus luas permukaan balok?

SACC : Sebenarnya kulupai ki kak apa rumusnya, itu mi ndak ada kutulis. Tapi ku gambar ki dulu bentuk balok baru bisa ma cariki luasnya, kan kalau mau ki cari ki luas permukaannya itu balok sama ji kalau dijumlahkan semua sisinya balok. Eeee.. na dibalok ada sisi yang sama luasnya, ku dapat mi itu kak kayak yang ini ku tulis.

PENELITI : Setelah kita kerjakan kayak gini (nunujuk pekerjaan siswa) bisa mki tau rumusnya apa kira kira?

SACC : Heheh iye kak

PENELITI : Apa coba dek?

SACC : Dua kali panjang kali tinggi ditambah dua kali lebar kali panjang ditambah dua kali panjang kali lebar.

PENELITI : Jadi berapa luas permukaan baloknya berapa?

SACC : 1120 cm^2 kak

PENELITI : Sekarang nomor tiga nah, kita baca berulang kali soalnya atau cuman sekali baca?

SACC : Ku ulangi kak.

PENELITI : Apa yang kita tahu dari soalnya?

SACC : Volumenya kak,729cm^3. Eeeh volume kubus.

PENELITI : Apa yang mau dicari?

SACC : Rusuknya itu kubus.

PENELITI : Jadi gimana cara cari jawabannya?

SACC : Pakai itu ji kak rumus volume kubus yang r pangkat tiga. Tapi bedanya ini rusuknya yang mau di cari bukanmi volumenya.

PENELITI : Terus kita dapat berapa hasilnya?

SACC : Rusuknya 27cm kak.

PENELITI : Kenapa bisa?

SACC : Akar pangkat tiga dari 729.

PENELITI : Nah akar pangkat tiga dari 729 ?

SACC : 27 kak. (diam sejenak, perhatikan pekerjaannya) Ih astagafirullah salah ka kak, akar pangkat dua yang ku kerjakan. Ndak fokus ka heheh. (Menghitung akar pangkat tiga dari 729) Deh 9 kak, 9 cm jawabannya kak.

PENELITI :Iya dek ndak apa apa ji, yang penting kita paham maksud soalnya dan cara kerjakan ki, lain kali lebih fokus saja.

SACC : Iye kak.

PENELITI : Terakhir soal nomor 4, dibaca ulang atau ndak?

SACC : Diulang kak.

PENELITI : Informasi apa yang ada di soal?

SACC : Tinggi, lebar dan panjangnya balok.

PENELITI : Berapa- berapa itu dek?

SACC : Tingginya 60, lebarnya 60, dan panjangnya 80cm.

PENELITI : Apa yang mau dicari?

SACC : 2/3 volume balok atau baknya.

PENELITI : Jadi gimana cara selesaikannya?

SACC : Pertama di cari dulu volume aslinya, maksduku kak volume kalau full air itu baknya, nah kalau sudahmi kudapat itu, baru dikalikan dua baru bagi tiga untuk dapat 2/3 volume baknya.

PENELITI : Jadi berapa jawabannya?

SACC : 192.000 cm^3.

PENELITI : Kenapa cm^3 bukan cm^2? karena volume kak, untuk mau dapat volumekan tiga kali perkalian ki, jadi itu mi pangkat tigaki, kalau cm^2 untuk yang luas ji kak.

SACC : Karena volume kak, untuk mau dapat volume kan tiga kali perkalian ki, jadi itu mi pangkat tigaki, kalau cm^2 untuk yang luas ji kak.

PENELITI : Oh iye dek, Terima kasih.

Transkrip Wawancara Subjek *Accomodator*

PENELITI : Hai dek, kan sudah meki kerja soal dari kakak, nah sekarang kakak mau ajukan beberapa pertanyaan tentang jawabanta.

SCON : Iya kak.

PENELITI : Ok, dek. Langsung saja nah, ini nomor 1 waktu dikerjakan soalnya kita baca ulang – ulang soalnya atau tidak ?

SASS : Tidak

PENELITI : Satu kali baca langsungki kerja soalnya ?

SASS : Iya

PENELITI : Kita pahami langsung maksud soalnya ?

SASS : Iya

PENELITI : Terus apa yang di maksud disini 20 cm x 20 cm x 20 cm ?

SASS : Itu ukuran kuenya

PENELITI : Kalau 20cm saja itu apa dek?

SASS : Hmm.. ndak tau mi kak

PENELITI : Terus, jadi yang 2400 cm2 ini apa ?

SASS : Luas kertas karton

PENELITI : Nomor 2, nomor 2 kita baca ulang atau tidak ?

SASS : Baca ulang

PENELITI : Kenapa ada yang kurang kita pahami soalnya ? atau gimana ?

SASS : Pertamanya tidak baca jelas

PENELITI : Kedua untuk memperjelas, jadi kita baca ulang ?

SASS : Iya

PENELITI : Yang ini lagi dek, 20 cm x 10 cm x 12 cm ini apa ?

SASS : Ukuran kado

PENELITI : 20 mewakili apa ? 10 mewakili apa ? dan 12 mewakili apa ?

SASS : 20 panjang , 10 tinggi, dan 12 cm lebar

PENELITI : Ini dihasil akhir kenapa ada coret – coret ?

SASS : Karena salah tulis

PENELITI : Salah tulis ? salah tulis atau salah hitung terus kita ubah – ubah ?

SASS : Dua – duanya

PENELITI : Oh iye, terus kenapa pakai rumus begini ki dek? (nunjuk perkerjaan siswa)

SASS : Yang diajarkan sama yang setahu ku begitu.

PENELITI : Kita pahami ji kenapa bisa begini rumusnya?

SASS : Ndak kak, begitu ji saja nakasih tahu guruku, jadi itu ji langsung ku hafal.

PENELITI : Terus yang nomor 3, nomor 3 kita baca ulang atau tidak ?

SASS : Baca ulang ?

PENELITI : Apa yang ditanyakan nomor 3 ?

SASS : Berapa panjang rusuk

PENELITI : Berapa panjang rusuknya ? terus ini 729 cm3 apa ?

SASS : Volume kubus

PENELITI : Terus, ini kakak mau nanya 6 x s^2 itu apa ?

SASS : Luas permukaan kubus

PENELITI : Yakin? Dari tadi katanya volumenya ditanya kenapa jadi luas permukaan ?

SASS : Salah, salah itu

PENELITI : Terus kenapa disini jadi s pangkat 2 ?

SASS : Tidak tahu

PENELITI : Yang ini kenapa jadi akar 2 ? bukan akar 3 ?

SASS : Karena akar 2 begini, jadi salah ka

PENELITI : Iya tidak apa – apa, lanjut mki dinomor 4 . di nomor 4 bagaimana ? kita baca ulang atau tidak?

SASS : Ulang kak

PENELITI : Apa yang ditanyakan di nomor 4 ?

SASS : Volumenya bak yang terisi 2/3

PENELITI : Bagaimana caranya kita cari jawabannya ?

SASS : Cari volumenya dulu, baru kalau di dapat volumenya kali 2/3 supaya didapat bagian 2/3 nya

PENELITI : Eh ini 80, 60 itu apa ?

SASS : 60 itu lebar dan 80 tingginya

PENELITI : Jadi apa rumusnya volume balok ?

SASS : Panjang x lebar x tinggi

PENELITI : Dan ini 192.000 cm3 ini apa dek ?

SASS : Volume 2/3 kolam

APPENDIX C

LETTERS

KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI MAKASSAR
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
JURUSAN MATEMATIKA

Alamat :Kampus FMIPA UNM, Jln. Dg. Tata Raya, ParangTambung, Makassar

PENGAJUAN JUDUL SKRIPSI

Format: U1

Identitas

Nama	: Veby Rezki Hulsia	Program Studi	:Pendidikan Matematika ICP
NIM	: 1311440002	SKS yang dilulusi	: 136
Semester	: VIII	IPK	: 3.50

Rencana Judul Skripsi:

Profil Pemecahan Masalah Matematika Ditinjau dari Gaya Belajar dan ~~Kategori~~ Perilaku ~~Penyelesaian pada Materi~~ Sistem Persamaan Linear Dua Variabel Kelas VIII SMP

Pemecahan Masalah

VERIFIKASI JUDUL
Telah diperiksa dan dinyatakan
~~duplikasi~~/bukan duplikasi
Makassar, 11 Februari 2017
TIM PEER GROUP
Jurusan Matematika FMIPA UNM

siswa

Makassar, 10 Februari 2017
Yang mengajukan judul,

Veby Rezki Hulsia
1311440002

No.	Nama	Jabatan	Tanda Tangan	Keterangan
1.	Dr. Alimuddin, M.Si	Pembimbing Akademik		*)
2.	Syahrullah Asyari, M.Pd.	Ketua/Wakil Ketua Peer Group		**)

Ket. *)terkait kelayakan **)terkait duplikasi judul

Nama Pembimbing diisi oleh Ketua Jurusan:

Pembimbing	Nama
I	Dr. Alimuddin, M.Si
II	Prof. Dr. Hamzah Upu, Med.

Ketua Jurusan Matematika
FMIPA UNM

Dr. Awi Dassa, M.Pd
NIP. 19661110 199103 1 005

MINISTRY OF RESEARCH, TECHNOLOGY, AND HIGHER EDUCATION
STATE UNIVERSITY OF MAKASSAR
MATHEMATICS AND SCIENCE FACULTY
MATHEMATICS DEPARTMENT
FMIPA UNM Jln. Dg. Tata Raya, Parang Tambung, Makassar Telp. (0411) 864936

TITLE PROPOSING FORM OF THESIS

Format: U1

Identity

Name	: Veby Rezki Hulsia	Study Program	: ICP Mathematics Edu.
ID	: 1311440002	Number of CH	: 136
Semester	: VIII	GPA	: 3.50

Proposing of Thesis Title :

Profile of Mathematics Problem-Solving Based on Learning Styles and Completion Behavior Categories in Linear Equations System with Two Variabels in Grade VIII SMP

which is viewed from Problem-Solving in Carrying Out Problemson of

VERIFIKASI JUDUL
Telah diperiksa dan dinyatakan
~~duplikasi~~/bukan duplikasi
Makassar, 11 Februari 2017
TIM PEER GROUP
Jurusan Matematika FMIPA UNM

Makassar, February 7th 2017
Proposer of Thesis Title,

Veby Rezki Hulsia
1311440002

No.	Name	Occupation	Sign	Information
1	Dr. Alimuddin, M.Si	Academic Adviser		*)
2	Syahrullah Asyari, M.Pd	Head/DeputyPeer Grup		**)

Information *)Expediency **) Duplication of Thesis Title

Adviser are filled by Head of Department :

Adviser	Name
I	Dr. Alimuddin, M.Si.
II	Prof. Hamzah, M.Ed.

Head of Mathematics Department
FMIPA UNM

Dr. Awi Dassa, M.Si.
NIP. 19661110 199103 1 005

Format: P1

LEMBAR PERSETUJUAN SEMINAR PROPOSAL SKRIPSI

Judul skripsi : Profil Perilaku Pemecahan Masalah Matematika Berdasarkan Klasifikasi Pape ditinjau dari Gaya Belajar Siswa Kelas VIII SMP

Nama : Veby Rezki Hulsia

NIM : 1311440002

Program Studi : Pend. Matematika ICP

Setelah melakukan pembimbingan dan mahasiswa tersebut telah memperbaiki proposalnya, maka kami menyatakan bahwa proposal ini dapat diseminarkan.

Menyetujui:

Pembimbing I

Dr. Alimuddin, M.Si
NIP. 19631231 198803 1 030

Pembimbing II

Prof. Dr. Hamzah Upu, M.Pd
NIP. 19660801 198903 1 001

Mengetahui:

Ketua Jurusan Matematika
FMIPA UNM

Dr. Awi Dassa, M.Si
NIP. 19661110 199103 1 005

Ketua Program Studi Pendidikan Matematika

Dr. Asdar, S.Pd, M.Pd
NIP. 19710128 200212 1 001

Format: P1

SEMINAR PROPOSAL APPROVAL

Thesis Title : Profile Mathematics Problem-Solving Behaviour Based on Students' Pape Classification with Their Learning Style on Grade VIII SMPIT AL-Insyirah

Name : Veby Rezki Hulsia

ID : 1311440002

Study Program : ICP Mathematics Education

After coaching and the student have improved her proposal, then we declare that this proposal can be presented in a seminar.

Approved by:

Adviser I

Dr. Alimuddin, M.Si
NIP. 19631231 198803 1 030

Adviser II

Prof. Dr. Hamzah Upu, M.Pd
NIP. 19660801 198903 1 001

Recognized by:

Head of Mathematics Department
FMIPA UNM

Dr. Awi Dassa, M.Si
NIP. 19661110 199103 1 005

Head of Mathematics Education Study Program

Dr. Asdar, S.Pd, M.Pd
NIP. 19710128 200212 1 001

KEMENTERIAN RISET TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI MAKASSAR
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
Alamat : Kampus UNM Parangtambung, Jalan Daeng Tata Makassar
Telepon : 0411- 864936 Fax.0411-880568
Laman : http://mipa.unm.ac.id

Nomor : 2044/UN36.1/PL/2017 Makassar, 08 Mei 2017

Lamp : _ _ _ _ _

Hal : Permohonan Izin Penelitian

Kepada Yth.
Bapak Gubernur Provinsi Sulawesi Selatan
Cq. Kepala UPT P2T BKPMD Prov. Sulsel
Di-
Tempat

Dengan hormat di sampaikan kepada Bapak/Ibu bahwa mahasiswa tersebut dibawah ini :

Nama : Veby Rezki Hulsia

Nim : 1311440002

Prodi : Pendidikan Matematika ICP

Akan Mengadakan penelitian dalam rangka penyelesaian pendidikan Program Sarjana MIPA Universitas Negeri Makassar.

Adapun Materi yang berjudul :
Profil Perilaku Pemecahan Masalah Matematika berdasarkan Klasifikasi *Pape* ditinjau dari Gaya Belajar Siswa Kelas VIII SMPN 30 Makassar

Dosen Pembimbing : 1. Dr. Alimuddin, M.Si
2. Prof. Dr. Hamzah Upu, M.Ed

Lokasi Penelitian : SMP Negeri 30 Makassar

Pelaksanaan direncanakan selama 2 bulan, yakni bulan Mei – Juni 2017. Sehubungan maksud tersebut dimohon kiranya kepada yang bersangkutan dapat diberikan izin.

Atas bantuan dan kerjasama yang baik diucapkan terimakasih.

A.n. Dekan,
Pembantu Dekan Bidang Akademik

Drs. Suwardi Annas, M.Si, Ph.D
NIP. 19691231 199403 1 110

1201719142660 6

PEMERINTAH PROVINSI SULAWESI SELATAN
DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU
BIDANG PENYELENGGARAAN PELAYANAN PERIZINAN

Nomor : **6461/S.01P/P2T/05/2017**
Lampiran :
Perihal : **Izin Penelitian**

KepadaYth.
Walikota Makassar

di-
Tempat

Berdasarkan surat Pembantu Dekan Bid. Akademik FMIPA UNM Makassar Nomor : 2044/UN36.1/PL/2017 tanggal 08 Mei 2017 perihal tersebut diatas, mahasiswa/peneliti dibawah ini:

N a m a	:	**VEBY REZKI HULSIA**
Nomor Pokok	:	1311440002
Program Studi	:	Pend. Matematika ICP
Pekerjaan/Lembaga	:	Mahasiswa(S1)
Alamat	:	Kampus UNM Parangtambung, Makassar

Bermaksud untuk melakukan penelitian di daerah/kantor saudara dalam rangka penyusunan Skripsi, dengan judul :

" PROFIL PERILAKU PEMECAHAN MASALAH MATEMATIKA BERDASARKAN KLASIFIKASI PAPE DITINJAU DARI GAYA BELAJAR SISWA KELAS VIII SMPN 30 MAKASSAR "

Yang akan dilaksanakan dari : Tgl. ***12 Mei s/d 12 Juni 2017***

Sehubungan dengan hal tersebut diatas, pada prinsipnya kami ***menyetujui*** kegiatan dimaksud dengan ketentuan yang tertera di belakang surat izin penelitian.

Demikian Surat Keterangan ini diberikan agar dipergunakan sebagaimana mestinya.

Diterbitkan di Makassar
Pada tanggal : 12 Mei 2017

A.n. GUBERNUR SULAWESI SELATAN
KEPALA DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU PROVINSI SULAWESI SELATAN
Selaku Administrator Pelayanan Perizinan Terpadu

A. M. YAMIN, SE., MS.
Pangkat : Pembina Utama Madya
Nip : 19610513 199002 1 002

Tembusan Yth
1. Pembantu Dekan Bid. Akademik FMIPA UNM Makassar di Makassar;
2. *Pertinggal.*

PEMERINTAH KOTA MAKASSAR
BADAN KESATUAN BANGSA DAN POLITIK
Jalan Ahmad Yani No 2 Makassar 90111
Telp +62411 – 3615867 Fax +62411 – 3615867
Email : Kesbang@makassar.go.id Home page : http.www.makassar.go.id

Makassar, 15 Mei 2017

K e p a d a

Nomor : 070 / 1659 -II/BKBP/V/2017
Sifat :
Perihal : **Izin Penelitian**

Yth. KEPALA DINAS PENDIDIKAN KOTA MAKASSAR

Di –
MAKASSAR

Dengan Hormat,

Menunjuk Surat dari Kepala Dinas Koordinasi Penanaman Modal Daerah Provinsi Sulawesi Selatan Nomor : 6461 /S.01P/P2T/05/2017, Tanggal 12 Mei 2017, Perihal tersebut di atas, maka bersama ini disampaikan kepada Bapak bahwa:

Nama	:	**VEBY REZKI HULSIA**
Nim/Jurusan	:	1311440002 / pend. Matematika ICP
Pekerjaan	:	Mahasiswa (S1) FMIPA UNM
Alamat	:	Kampus UNM Parangtambung, Makassar
Judul	:	***"PROFIL PERILAKU PEMECAHAN MASALAH MATEMATIKA BERDASARKAN KLASIFIKASI PAPE DI TINJAU DARI GAYA BELAJAR SISWA KELAS VIII SMPN 30 MAKASSAR "***

Bermaksud mengadakan ***Penelitian*** pada Instansi / Wilayah Bapak, dalam rangka ***Penyusunan Skripsi*** sesuai dengan judul di atas, yang akan dilaksanakan mulai tanggal **15 Mei s/d 12 Juni 2017.**

Sehubungan dengan hal tersebut, pada prinsipnya kami dapat **menyetujui dengan memberikan surat rekomendasi izin penelitian ini** dan harap diberikan bantuan dan fasilitas seperlunya

Demikian disampaikan kepada Bapak untuk dimaklumi dan selanjutnya yang bersangkutan melaporkan hasilnya kepada Walikota Makassar Cq. Kepala Badan Kesatuan Bangsa dan Politik.

A.n.WALIKOTA MAKASSAR
KEPALA BADAN KESBANG DAN POLITIK
Up. KABID. HUBUNGAN ANTAR LEMBAGA

Drs. AKHMAD NAMSUM, MM.
Pangkat : Pembina Tk. I
NIP : 19670524 200604 1 004

Tembusan :
1. Kepala Badan Kesatuan Bangsa dan Politik Prop. Sul – Sel. di Makassar;
2. Kepala Unit Pelaksana Teknis P2T Badan Koordinasi Penanaman Modal Daerah Prop. Sul Sel di Makassar;
3 Pembantu Dekan Bid. Akademik FMIPA UNM Makassar di Makassar;

PEMERINTAH KOTA MAKASSAR
DINAS PENDIDIKAN

Jl. Letjen Hertasning No. 8 Telp. (0411) 868073 Faks. 869256 Makassar 90222
Website:http//www.dikbud_makassar.info ; e-mail:dikbud.makassar@yahoo.com

IZIN PENELITIAN
NOMOR :070/ 3378 /DP/V/2017

Dasar : Surat Kepala Kantor Badan Kesatuan Bangsa Kota Makassar
Nomor : 070/1654-II/BKBP/V/2017 Tanggal 15 Mei 2017
Maka Kepala Dinas Pendidikan Kota Makassar

M E N G I Z I N K A N

Kepada :

Nama	: **VEBY REZKI HULSIA**
NIM / Jurusan	: 1311440002 / Pend. Matematika ICP
Pekerjaan	: Mahasiswa (S1)
Alamat	: Jl. Kampus UNM Parangtambung, Makassar

Untuk : Mengadakan ***Penelitian*** di ***SMPN 30 Makassar*** dalam rangka ***Penyusunan Skripsi*** di ***FMIPA UNM Makassar*** dengan judul penelitian :

"PROFIL PERILAKU PEMECAHAN MASALAH MATEMATIKA BERDASARKAN KLASIFIKASI PAPE DI TINJAU DARI GAYA BELAJAR SISWA KELAS VIII SMPN 30 MAKASSAR"

Dengan ketentuan sebagai berikut :

1. Harus melapor kepada Kepala Sekolah yang bersangkutan
2. Tidak mengganggu Proses kegiatan belajar mengajar di Sekolah
3. Harus mematuhi tata tertib dan peraturan di Sekolah yang Berlaku
4. Hasil Penelitian 1 (satu) eksamplar di laporkan kepada Kepala Dinas Pendidikan Kota Makassar.

Demikian izin penelitian ini di berikan untuk di gunakan sebagaimana mestinya

Dikeluarkan di : Makassar
Pada Tanggal : 15 Mei 2017

A.n KEPALA DINAS
Kasubag Umum dan Kepegawaian

PEMERINTAH KOTA MAKASSAR DINAS PENDIDIKAN

Hj. ERNAWATI, SE, M.Pd, M.Si
Pangkat : Pembina
NIP : 19670421 199401 2 003

PEMERINTAH KOTA MAKASSAR
DINAS PENDIDIKAN DAN KEBUDAYAAN
SEKOLAH MENENGAH PERTAMA NEGERI 30 MAKASSAR
Kompleks Perumnas Bumi Tamalanrea Permai (BTP) Telp./Fax. 0411-584725 Kode Pos 90245
NPSN:40307329, http://www.smpn30mks.sch.id , e-mail: smpn30mks@yahoo.co.id NSS:201196014205

LEMBARAN DISPOSISI

RAHASIA **PENTING** **RUTIN**

Indeks : 079
Tanggal terima : 22-5-2017.
Perihal : Izin penelitian
Tanggal Surat : 15 Mei 2017.
Nomor Surat : 070/3378/DP/V/2017.

INPORMASI INSTRUKSI

1. Harap petunjuk
2. Harap keputiusan
3. Harap dibicarakan
4. Untuk diketahui
5. Untuk diperhatikan
6. Untuk diedarkan
7. Untuk diarsipkan (File)
8. Untuk Saran
9. Siapkan Konsep
10. Siapkan Laporan
11. Selesaikan sesuai keputusan
12. Selesaikan sesuai pembicaraan

DITERUSKAN KEPADA

1. Kepala Tata Usaha
2. Wakasek Kurikulum - /ardi wara
3. Wakasek Kesiswaan
4. Wakasek Sarana
5. Wakasek Humas
6. Kordinator BK
7.

Makassar, 24 Mei 2017
Kepala Sekolah,

HJ. RAHMENANG, S.Pd., M.Pd
Pangkat : Pembina Tk.I

PEMERINTAH KOTA MAKASSAR
DINAS PENDIDIKAN
SEKOLAH MENENGAH PERTAMA 30 NEGERI MAKASSAR
Kompleks Perumnas Bumi Tamalanrea Permai (BTP) Telp./Fax. 0411-584725 Kode Pos 90245
NPSN:40307329, http://www.smpn30mks.sch.id , e-mail: smpn30mks@yahoo.co.id NSS:201196014205

SURAT KETERANGAN TELAH PENELITIAN

Nomor : 423.6/ 264 /SMP.30/X/2017

Yang bertanda tangan di bawah ini, Kepala SMP Negeri 30 Makassar menerangkan bahwa :

N a m a	**: Veby Rezki Hulsia**
N I M / Jurusan	**: 1311440002/ Matematika**
Perguruan Tinggi	**: Universitas Negeri Makassar**
Alamat	**: BTN. Mangga Tiga C.12 No.22 Makassar**

Benar yang bersangkutan telah melaksanakan penelitian pada bulan Juni 2017 s.d. September 2017 di SMP Negeri 30 Makassar dalam rangka penyusunan Skripsi dengan judul : "Profil Perilaku Pemecahan Masalah Matematika berdasarkan Klasifikasi *Pape* ditinjau dari Gaya Belajar Siswa Kelas VIII SMP Negeri 30 Makassar".

Demikian surat keterangan penelitian ini diberikan kepada yang bersangkutan untuk dipergunakan sebagaimana mestinya.

Makassar, 30 Oktober 2017
Kepala Sekolah,

PEMERINTAH KOTA MAKASSAR SMPN 30 DINAS PENDIDIKAN

HJ. RIAH ENANG, S.Pd., M.Pd.
Pangkat : Pembina Tk.I
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KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI MAKASSAR
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
JURUSAN MATEMATIKA
Alamat : Kampus FMIPA UNM Jln. Dg. Tata Raya, Parang Tambung, Makassar

Format: H1

LEMBAR PERSETUJUAN SEMINAR HASIL

Judul skripsi : Profil Perilaku Pemecahan Masalah Matematika Berdasarkan Klasifikasi Pape ditinjau dari Gaya Belajar Siswa Kelas VIII SMP Negeri 30 Makassar

Nama : Veby Rezki Hulsia

NIM : 1311440002

Program Studi : Pend. Matematika ICP

Setelah melakukan pembimbingan dan mahasiswa tersebut telah memperbaiki draf hasil penelitiannya, maka kami menyatakan bahwa hasil penelitian ini dapat diseminarkan.

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COLLOQUIUM OF THESIS APROVAL

Thesis Title	:	Profile Mathematics Problem-Solving Bahaviour Based on Student's Pape Classification with Their Learning Style on Grade VIII SMP Negeri 30 Makassar
Name	:	Veby Rezki Hulsia
ID	:	1311440002
Study Program	:	Mathematics Education

After coaching and the student has improved her thesis, then we declare that this thesis can be presented in the seminar

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Makassar, 30 Oktober 2017

Nomor : 3974/UN36.1/PP/2017
Lamp. : 1 (satu) Naskah Skripsi
Hal : ***Undangan Ujian Skripsi***

Kepada

Yth. Bapak/Ibu Dosen Tim Penguji Skripsi

1. Ketua Ujian : *Prof. Dr. Abdul Rahman, M.Pd.*
2. Sekretaris : *Nasrullah, S.Pd., M.Pd.*
3. Pembimbing I : *Dr. Alimuddin, M.Si.*
4. Pembimbing II : *Prof. Dr. H. Hamzah Upu, M.Ed.*
5. Penguji I : *Dr. Asdar, S.Pd., M.Pd.*
6. Penguji II : *Fajar Arwadi, S.Pd., M.Sc*

di
Makassar

Assalamu Alaikum Wr. Wb.

Dengan petunjuk Allah SWT., kami mengundang Bapak/Ibu menghadiri dan menguji

Nama : Veby Rezki Hulsia
N I M : 1311440002
Judul Skripsi : Profile Mathematics Problem-Solving Behaviour Based on Students' Pape Classification with Their Learning Style on Grade VIII SMPIT Al-Insyirah

yang insya Allah dilaksanakan pada:

Hari, tanggal : Jumat, 15 Desember 2017
J a m : 10.00 - Selesai
Tempat : Ruang 417 Gedung ICP Lt 4

Kehadiran Bapak/Ibu sangat diharapkan tepat pada waktunya dan tanpa kehadirannya, ujian skripsi yang bersangkutan akan ditunda.
Demikian undangan kami dan semoga Allah SWT merahmati kita semua.

Wassalamu Alaikum Warahmatullahi Wabarakatuh

Dekan,

Prof. Dr. Abdul Rahman, M.Pd.
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Catatan:
Diharapkan datang paling lambat 5 menit sebelum ujian dimulai

DOCUMENTATION

Research License to Headmaster of SMP Negeri 30 Makassar

Filling Learning Style Questionnaire By Students Grade VIII.1 and VIII.2 SMP Negeri 30 Makassar

Converger Student

Diverger Student

Accomodator Student

Assimilator Student

BIOGRAPHY

Veby Rezki Hulsia, was born in Sanrego, Bone, on June 13th, 1995. The only child of Husbianto Uslah and Samsia. The author started elementary school (SD) from 2001 to 2007 in SDIT Al-Insyirah. In the same year the author continued the education to junior high school (SMP) in SMP Negeri 12 Makassar and successfully completed his studies in 2010. Then the authors continue education to senior high school level (SMA) in SMAN 15 Makassar from 2010 to year 2013. In the same year, through the SNMPTN authors received at the Mathematics Department of Mathematics Education Studies Program ICP Strata One (S1) Faculty of Mathematics and Natural Sciences of Makassar State University.